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Sam.l Lewis M.D.

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COLLE
OF
PHILADELPHIA.

TRANSACTIONS

OF THE

PATHOLOGICAL SOCIETY

OF PHILADELPHIA.

VOLUME SEVENTH.

CONTAINING THE REPORT OF THE PROCEEDINGS FOR THE SESSION FROM SEPTEMBER, 1876, TO JULY, 1877.

EDITED BY

J. HENRY C. SIMES, M.D.,

LECTURER ON HISTOLOGY IN THE UNIVERSITY OF PENNSYLVANIA; RECORDER OF THE SOCIETY.

PHILADELPHIA:
PRINTED FOR THE SOCIETY BY J. B. LIPPINCOTT & CO.
1878.

THE present volume includes the Transactions of the Society for the session 1876–7,—that is, from September, 1876, to June, 1877, inclusive.

Entered, according to Act of Congress, in the year 1878, by
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Former Presidents.

SAMUEL D. GROSS, M.D., LL.D. Oxon., elected 1857.
RENÉ LA ROCHE, M.D., elected 1858.
ALFRED STILLÉ, M.D., elected 1859–61–62 and '63.
EDWARD HARTSHORNE, M.D., elected 1863.
J. M. DA COSTA, M.D., elected 1864, '65 and '66.
JOHN H. PACKARD, M.D., elected 1867 and '68.
S. WEIR MITCHELL, M.D., elected 1869.
JOHN ASHHURST, Jr., M.D., elected 1870.
JAMES H. HUTCHINSON, M.D., elected 1871 and '72.
WILLIAM PEPPER, M.D., elected 1873.
H. LENOX HODGE, M.D., elected 1876.

OFFICERS AND COMMITTEES

OF THE

Pathological Society of Philadelphia.

President.

H. LENOX HODGE, M.D.,

ELECTED OCTOBER, 1876, FOR THREE YEARS.

ELECTED AT THE ANNUAL MEETING, OCTOBER, 1877.

Vice-Presidents.

HARRISON ALLEN, M.D.,
W. F. NORRIS, M.D.,
R. M. BERTOLET, M.D.,
JAMES TYSON, M.D.

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Committee on Publication.

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J. H. BRINTON, M.D., S. ASHHURST, M.D.,
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J. G. RICHARDSON, M.D., J. GUITÉRAS, M.D.,
J. C. WILSON, M.D., J. H. C. SIMES, M.D.,
E. O. SHAKESPEARE, M.D.

LIST OF MEMBERS.

Members marked N. R. are non-resident.
Members marked O. M. are of those originating the Society.

Elected

1876 Abel, F. T., Philadelphia Hospital.
1857 Agnew, D. Hayes, Professor of Surgery in the University of Pennsylvania, 1611 Chestnut Street. (O. M.)
1871 Alison, Robert H., 250 South Seventeenth Street.
1864 Allen, Harrison, Professor of Comparative Anatomy in the University of Pennsylvania, 117 South Twentieth Street.
1869 Allis, Oscar H., one of the Surgeons to the Presbyterian Hospital, 1604 Spruce Street.
1865 Andrews, Thomas H., Demonstrator of Anatomy in the Jefferson Medical College, 1117 Spruce Street.
1871 Ashbridge, William, Surgeon to the German Hospital, 1702 Chestnut Street.
1867 Ashhurst, Francis, Mount Holly, N. J. (N. R.)
1861 Ashhurst, John, Jr., one of the Surgeons to the Episcopal Hospital, 2000 West Delancey Place.
1863 Ashhurst, Samuel, 1423 Walnut Street.
1871 Atlee, Washington L., Jr.*

1866 Bache, T. Hewson, 233 South Thirteenth Street.
1878 Baer, B. F., 1932 Bainbridge Street.
1876 Barr, J. W., 804 South Tenth Street.
1867 Bartles, William H., Insane Department Pennsylvania Hospital, West Philadelphia. (N. R.)
1869 Barton, J. M., 1209 Spruce Street.
1873 Beecher, A. C. W., 925 Walnut Street.
1870 Bell, J. R. F.*
1871 Bennett, Wm. H., 332 South Fifteenth Street.
1863 Benton, C. H. (N. R.)
1875 Bernardy, Eugene P., 221 South Seventeenth Street.
1870 Bertolet, Robert Morris.
1871 Betts, Thomas, Branchtown, Pa. (N. R.)
1860 Bishop, C. S., died ——.

Elected

1866 Black, J. J., New Castle, Delaware. (N. R.)
1863 Boardman, C. H., St. Paul, Minnesota. (N. R.)
1857 Boker, Charles S., one of the Surgeons to the St. Joseph's Hospital, 1622 Chestnut Street. (O. M.)
1868 Bolles, Lucius S., died August 15th, 1873.
1877 Bradford, T. Hewson, 1905 Pine Street.
1873 Bray, Daniel, Lecturer on Operative Obstetrics in the University of Pennsylvania, 1619 Vine Street.
1876 Brewster, W. B.*
1857 Brinton, John H., one of the Surgeons to the Philadelphia Hospital, 1423 Spruce Street. (O. M.)
1874 Brubaker, A. P., 217 North Thirteenth Street.
1874 Bruen, Edward T., one of the Visiting Physicians to the Philadelphia Hospital, 1531 Chestnut Street.
1871 Buck, William Penn, resigned October 23d, 1873.
1867 Burnett, C. H., Aural Surgeon to the Presbyterian Hospital, 127 South Eighteenth Street.

1872 Cathcart, James H., died March 5th, 1874.
1871 Cheston, C. Morris, West River, Maryland. (N. R.)
1865 Cheston, D. Murray, one of the Physicians to the Children's Hospital, 1839 Chestnut Street.
1871 Clark, Leonardo S., 1505 Girard Avenue.
1866 Cleemann, Richard A., one of the Physicians to the St. Mary's Hospital, 340 South Twenty-first Street.
1872 Cohen, J. Solis, Lecturer on Laryngoscopy and Diseases of the Throat and Chest in the Jefferson Medical College, 1431 Walnut Street.
1877 Collins, James, 538 Marshall Street.
1869 Corbit, William B., Washington, D. C. (N. R.)
1877 Cruice, R. B., 731 North Seventeenth Street.
1871 Curtin, Roland G., Lecturer on Physical Diagnosis in the University of Pennsylvania, 332 South Seventeenth Street.

1857 Da Costa, J. M., Professor of Theory and Practice of Medicine in the Jefferson Medical College, 1700 Walnut Street. (O. M.)
1859 Darby, John T., New York City. (N. R.)
1876 Darlington, W. L., 1518 Columbia Avenue.
1857 Darrach, James, 5094 Green Street, Germantown. (O. M.)
1868 Darrach, William, 42 Queen Street, Germantown.
1870 Deal, Lemuel J.*
1877 Deaver, R. W., 4613 Germantown Avenue.
1877 Drysdale, T. M., northeast corner Sixteenth and Arch Streets.
1866 Duer, Edward L., one of the Obstetricians to the Philadelphia Hospital, 1704 Arch Street.

*

Elected

1870 Duhring, L. A., Clinical Professor of Dermatology in the University of Pennsylvania, 1416 SpruceStreet.
1876 Dulles, C. W., 4041 Locust Street.
1860 Dunton, W. R., 5059 Germantown Avenue, Germantown.
1863 Dyer, Ezra, Pittsburg, Pennsylvania. (N. R.)

1875 Engel, Hugo, northeast corner Fifth and Wood Streets.
1876 Eskridge, J. T., 1614 North Sixteenth Street.

1857 Fischer, Emil, southeast corner Sixth and Brown Streets. (O. M.)
1863 Fish, Augustine H., died August 3d, 1872.
1876 Fisher, Henry, Pennsylvania Hospital.
1857 Forbes, William S., one of the Surgeons to the Episcopal Hospital, 1405 Locust Street. (O. M.)
1869 Ford, William H., 1622 Summer Street.
1878 Formad, H. F., University of Pennsylvania.
1871 Fox, Charles, resigned December 10th, 1874.

1868 Garretson, James E., 1537 Chestnut Street.
1871 Gerhard, George S., Pathologist to the Presbyterian Hospital, 1823 Spruce Street.
1870 Getchell, Frank H., Clinical Lecturer on Diseases of Women in the Jefferson Medical College, 1432 Spruce Street.
1877 Gilliard, Louis, 910 Race Street.
1877 Goldsborough, C. B. (N. R.)
1866 Goodell, William, Clinical Professor of Diseases of Women in the University of Pennsylvania, Preston Retreat, Twentieth and Hamilton Streets.
1868 Goodman, H. Earnest, one of the Surgeons to the Orthopædic Hospital, 1427 Chestnut Street.
1876 Gorgas, S. R.*
1868 Graham, James, 1528 Spruce Street.
1867 Grier, Matthew J., 1531 Spruce Street.
1868 Gross, Ferdinand H., one of the Surgeons to the German Hospital, 608 North Sixth Street.
1857 Gross, Samuel D., Professor of Surgery in the Jefferson Medical College, southeast corner of Eleventh and Walnut Streets. (O. M.)
1858 Gross, Samuel W., one of the Visiting Surgeons to the Philadelphia Hospital, 1112 Walnut Street.
1869 Grove, John H., one of the Surgeons to the St. Mary's Hospital, 1330 Arch Street.
1872 Gruel, Theodore H. E., 519 Spruce Street.
1874 Guitéras, John, one of the Visiting Physicians to the Philadelphia Hospital, 1912 Vine Street.

Elected

1871 Hale, George J.*

1857 Hall, A. Douglass, resigned October 9th, 1873. (O. M.)

1875 Hand, Frank C., Pennsylvania Hospital.

1866 Hare, Horace Binney, 120 South Twenty-second Street.

1868 Hargadine, R. W. (N. R.)

1859 Harlan, George C., one of the Surgeons to the Wills Ophthalmic Hospital, 1806 Chestnut Street.

1874 Harris, Charles M., 715 South Twenty-third Street.

1858 Harris, Robert P., resigned January 9th, 1873.

1857 Hartshorne, Edward, 331 South Broad Street. (O. M.)

1859 Hartshorne, Henry, resigned October 12th, 1864.

1867 Hassler, Ferdinand A., resigned February 9th, 1871.

1869 Hatfield, Nathan L., one of the Visiting Surgeons to the Philadelphia Hospital, 501 Franklin Street.

1868 Hayes, I. Minis, 1607 Locust Street.

1873 Hearn, Joseph, 324 Catharine Street.

1870 Henry, Frederick P., one of the Physicians to the Episcopal Hospital, 635 Spruce Street.

1866 Herbert, Theodore. (N. R.)

1857 Hewson, Addinell, one of the Surgeons to the Pennsylvania Hospital, southwest corner of Twenty-first and Walnut Streets. (O.M.)

1874 Hickman, N., 326 South Sixteenth Street.

1858 Hodge, H. Lenox, one of the Surgeons to the Presbyterian Hospital, 506 South Broad Street.

1871 Hoffman, Washington Atlee, died September 20th, 1874.

1860 Hopkins, Henry St. George. (N. R.)

1876 Hopkins, W. B., 2018 Spruce Street.

1877 Houritz, Theodore, died December 12th, 1877.

1870 Houston, James P. S., Savannah, Georgia. (N. R.)

1866 Howe, Herbert M., resigned February 28th, 1878.

1859 Hoyt, William D. (N. R.)

1857 Humphries, George H., New York City. (O. M., N. R.)

1868 Hunter, Charles T., Demonstrator of Surgery in the University of Pennsylvania, 1905 Walnut Street.

1870 Hutchins, E. R. (N. R.)

1858 Hutchinson, James H., one of the Physicians to the Pennsylvania Hospital, 2019 Walnut Street.

1866 Ingham, James V., one of the Obstetricians to the State Hospital for Women, 1342 Spruce Street.

1876 Ingram, T. D., 1601 Vine Street.

1874 Jameson, Edward, St. Louis, Mo. (N. R.)

1866 Jenks, William F., Surgeon to the State Hospital for Women. (N.R.)

Elected

1875 Johnson, Russell H., one of the Assistant Physicians to the Children's Hospital, 729 Pine Street.
1859 Kane, John K., Wilmington, Delaware. (N. R.)
1874 Keating, John M., one of the Visiting Physicians to the Philadelphia Hospital, northwest corner Twenty-second and Locust Streets.
1857 Keating, William V. (O. M.*)
1866 Keen, William W., Professor of Artistic Anatomy, Pennsylvania Academy of Fine Arts, 1729 Chestnut Street.
1857 Keller, William, resigned January 28th, 1875. (O. M.)
1875 Kelly, Joseph V., 4257 Main Street, Manayunk.
1858 King, William, United States Navy. (N. R.)
1869 Knight, Samuel R., Superintendent of the Episcopal Hospital.

1867 Lambdin, Alfred C.*
1871 Landis, Henry G., Niles, Ohio. (N. R.)
1872 La Roche, C. Percy, Nice, France. (N. R.)
1857 La Roche, René, resigned October 12th, 1871. (O. M.) Died December 9th, 1872.
1870 Leach, Alonzo L., 2118 Spruce Street.
1869 Leaman, Henry, 1031 Vine Street.
1860 Lee, Charles C., New York City. (N. R.)
1861 Leedom, John M., Pulaski Avenue, Germantown.
1857 Levick, James J., resigned October 13th, 1861. (O. M.)
1857 Levis, Samuel, 1330 Spruce Street. (O. M.)
1868 Lewis, Francis W., 2016 Spruce Street.
1869 Lewis, Fred. W., died 1873.
1875 Lewis, J. Morris, 1216 Walnut Street.
1877 Little, William S., 256 South Sixteenth Street.
1859 Livezy, Edward,* died 1876.
1876 Loder, P. E., 517 South Eighth Street.
1873 Longenecker, Jerome.
1870 Longstreth, Morris, Pathologist to the Pennsylvania Hospital, 333 South Twelfth Street.
1870 Loughlin, J. Eneu, 632 Christian Street.

1874 Mann, Charles H. (N. R.)
1867 Markoe, James.
1868 Martin, George. (N. R.)
1874 Matteson, Charles C., died.
1865 Maury, Frank F., one of the Surgeons to the Philadelphia Hospital, 1218 Walnut Street.
1870 Maxwell, J. Gordon,* died.
1866 McArthur, John A., 406 South Broad Street.
1861 McCall, C. A., resigned.

Elected

1868 McClure, W. Wallace, one of the Surgeons to the Wills Ophthalmic Hospital, 21 South Sixteenth Street.

1873 McCoy, A. W., Pittsburg, Pa. (N. R.)

1864 Mears, J. Ewing, one of the Surgeons to the St. Mary's Hospital. 1429 Walnut Street.

1873 Meigs, Arthur V., Assistant Physician to the Children's Hospital, 1208 Walnut Street.

1857 Meigs, John Forsyth, one of the Physicians to the Pennsylvania Hospital, 1208 Walnut Street. (O. M.)

1874 Miller, C. K. I., resigned December 28th, 1876.

1857 Mitchell, S. Weir, one of the Physicians to the Hospital for Nervous Diseases, 1524 Walnut Street. (O. M.)

1877 Moffett, William, Philadelphia Hospital.

1876 Montgomery, E. C., southeast corner of Twentieth and Jefferson Streets.

1857 Morehouse, George R., 227 South Ninth Street.

1857 Morton, Thomas George. (O. M.*)

1859 Moss, William, Chestnut Avenue, Chestnut Hill.

1871 Muhlenberg, Frank, 1911 Chestnut Street.

1869 Müller, August F., 4544 Germantown Avenue.

1873 Musser, Milton B., Fortieth and Locust Streets.

1869 Mustin, J. Burton, died 1871.

1869 Nancrede, Charles B., one of the Surgeons to the Episcopal Hospital, 2109 Pine Street.

1872 Newsham, Stanley P., 1507 South Fifth Street.

1868 Norris, Herbert, 313 South Eighteenth Street.

1868 Norris, Isaac, resigned November 12th, 1874.

1869 Norris, J. C., resigned February 10th, 1876.

1861 Norris, William F., Clinical Professor of Ophthalmology in the University of Pennsylvania, 1526 Locust Street.

1875 O'Hara, Michael, 31 South Sixteenth Street.

1874 Osgood, Hamilton. (N. R.)

1857 Packard, John H., one of the Surgeons to the Episcopal Hospital, 1928 Spruce Street. (O. M.)

1868 Pancoast, William H., Professor of Anatomy in the Jefferson Medical College, 1100 Walnut Street.

1873 Parish, William H., 324 South Seventeenth Street.

1875 Parks, Edward L. (N. R.)

1867 Parry, John S., died 1876.

1870 Paul, Comegys, Resident Physician, Eastern Penitentiary.

1875 Paul, James, 1608 Walnut Street.

1857 Penrose, R. A. F. (O. M.*)

Elected

1865 Pepper, George, died September 14th, 1872.

1865 Pepper, William, Professor of Clinical Medicine in the University of Pennsylvania, 1811 Spruce Street.

1870 Porter, William G., Jr., one of the Surgeons to the Presbyterian Hospital, 314 South Eleventh Street.

1874 Reed, Henry B., one of the Assistant Surgeons to the Episcopal Hospital, 2300 De Lancey Place.

1859 Reed, Thomas B., one of the Surgeons to the Presbyterian Hospital, 1427 Walnut Street.

1871 Rex, George A., 2118 Pine Street.

1869 Rex, Oliver P.*

1877 Reynolds, A. S., 1801 Poplar Street.

1864 Rhoads, Edward, died January 16th, 1871.

1869 Richardson, Elliott, Lecturer on Practical Obstetrics in the University of Pennsylvania, 737 Spruce Street.

1863 Richardson, Joseph G., one of the Visiting Physicians to the Presbyterian Hospital, 1835 Chestnut Street.

1857 Richardson, T. G., New Orleans, La. (O. M., N. R.)

1876 Risley, S. D., Lecturer on Ophthalmoscopy in the University of Pennsylvania, 1630 Walnut Street.

1868 Ritz, Charles M. (N. R.)

1876 Roberts, J. B., 1118 Arch Street.

1876 Roland, O. (N. R.)

1874 Ronaldson, William D., 4017 Locust Street.

1877 Rudderow, B. J., 527 North Nineteenth Street.

1876 Rush, W. H., Philadelphia Hospital.

1867 Santee, Eugene J., 532 North Sixth Street.

1863 Savery, William, Bryn Mawr, Pennsylvania, resigned February 11th, 1869.

1869 Schell, H. S., 1804 Chestnut Street.

1874 Seiler, Carl, 1608 Pine Street.

1870 Seyfert, Theodore H., resigned December 27th, 1877.

1870 Shaffner, Charles, 23 South Sixteenth Street.

1876 Shakespeare, E. O., Lecturer on Refraction and Accommodation and Operative Ophthalmic Surgery in the University of Pennsylvania, 1344 Spruce Street.

1869 Shapleigh, Elisha B., 658 North Eighth Street.

1868 Sherwood, Thomas H.*

1871 Simes, J. H. C., Lecturer on Histology in the University of Pennsylvania, 2033 Chestnut Street.

1868 Sinkler, Wharton, one of the Physicians to the Hospital for Nervous Diseases, 1534 Pine Street.

1858 Smith, A. H., Lecturer on Obstetrics at the Philadelphia Lying-in Charity, 1419 Walnut Street.

Elected

1863 Smith, E. A., 126 South Eighteenth Street.
1859 Smith, F. G., resigned November 13th, 1873.
1876 Smith, R. M., 25 South Sixteenth Street.
1875 Smith, Stanley, Lecturer on Physical Diagnosis in Jefferson Medical College, 224 South Sixteenth Street.
1876 Smyth, F. G., 1212 South Tenth Street.
1871 Sparks, George W.*
1866 Spooner, Edward A.*
1871 Starr, Louis, one of the Physicians to the Episcopal Hospital, 1417 Spruce Street.
1857 Stillé, Alfred, Professor of Theory and Practice of Medicine in the University of Pennsylvania, 3900 Spruce Street. (O. M.)
1870 Strawbridge, George, 1616 Chestnut Street, resigned June 10th, 1875.
1869 Stryker, Samuel S., one of the Obstetricians to the Philadelphia Hospital, 3709 Walnut Street.

1866 Thomas, Charles H., 1807 Chestnut Street.
1868 Thomson, William, one of the Surgeons to the Wills Ophthalmic Hospital, 1502 Locust Street.
1870 Tinkham, J. H., United States Navy. (N. R.)
1866 Townsend, George D. (N. R.)
1868 Townsend, R. M. (N. R.) Died.
1864 Turner, A. P. (N. R.)
1863 Tutt, Charles Pendleton, died May 11th, 1866.
1863 Tyson, James, Professor of General Pathology and Morbid Anatomy in the University of Pennsylvania, 1506 Spruce Street.

1871 Valdivieso, R. (N. R.)
1870 Van Harlingen, Arthur, Chief of the Dispensary for Diseases of the Skin, Hospital of the University of Pennsylvania, 129 South Fifteenth Street.

1874 Warder, Wm. H., one of the Obstetricians to the Philadelphia Hospital, 810 North Broad Street.
1867 Watson, E. W., 146 North Twentieth Street.
1866 Weightman, John F., resigned April 27th, 1871.
1876 Weir, A. H., 130 South Fifteenth Street.
1875 West, Franklin, 1722 Girard Avenue.
1875 Whelen, Alfred, Senior Assistant Physician to the Philadelphia Lying-in Charity, 1814 Locust Street.
1873 White, J. William, one of the Visiting Surgeons to the Philadelphia Hospital, 222 South Sixteenth Street.
1868 Willard, De Forrest, Lecturer on Orthopædic Surgery in the University of Pennsylvania, 113 South Sixteenth Street.
1865 Williams, Horace, one of the Obstetricians to the State Hospital for Women, 1717 Pine Street.

Elected

1875 Williamson, Jesse, one of the Surgeons to the Howard Hospital, 1711 Pine Street.
1867 Wilson, Ellwood, 212 South Fifteenth Street, resigned.
1869 Wilson, James C., one of the Visiting Physicians to the Philadelphia Hospital, 214 South Fifteenth Street.
1867 Wilson, James F., 1010 Race Street.
1869 Wilson, J. H. (N. R.)
1873 Winslow, W. H., resigned December 28th, 1876.
1864 Wistar, Thomas, resigned February 13th, 1867.
1875 Wolford, W. S., 133 South Thirteenth Street.
1863 Wood, Horatio C., Jr.*
1865 Woods, D. Flavel, one of the Physicians to the Presbyterian Hospital, 151 North Fifteenth Street.
1857 Woodward, J. J., United States Army, Washington, D.C. (O.M.,N.R.)
1872 Worthington, David J., 116 South Fifteenth Street.

1876 Zeigler, G. W. (N. R.)

Members marked * have forfeited their membership.

CORRESPONDING MEMBERS.

1866 Bumstead, Freeman J., Professor of Venereal Diseases in the College of Physicians and Surgeons, New York.
1859 Clark, Alonzo, Professor of Theory and Practice of Medicine in the College of Physicians and Surgeons, New York.
1859 Dalton, J. C., Professor of Physiology in the College of Physicians and Surgeons, New York.
1860 Ellis, Calvin, Professor of Theory and Practice of Medicine in the Medical Department of Harvard University, Boston, Massachusetts.
1858 Flint, Austin, Sr., Professor of Theory and Practice of Medicine in Bellevue Hospital Medical College, New York.
1858 Hammond, William A., Member of the National Academy of Sciences, New York.
1860 Isaacs, Charles E., Brooklyn. Died June 16th, 1860, æt. 48.
1860 Reeves, James E., Wheeling, West Virginia.
1861 Rokitansky, Carl, Professor of Pathological Anatomy in the University of Vienna.
1860 Watson, John, New York. Died June 3d, 1863, æt. 56.
1859 Worthington, Wilmer, West Chester, Pennsylvania. Died 1873.

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REPORT.

I.—THE OSSEOUS SYSTEM.

CASES OF COMPOUND FRACTURE OF THE SKULL OCCURRING IN CHILDREN; WITH REMARKS.

1. *Compound, depressed, non-impacted fracture of skull, with symptoms of intra-cranial injury; removal of fragment; recovery.*

By Dr. John Ashhurst, Jr.

Mary L., 8 years of age, was admitted to the Children's Hospital on August 23d, 1876, having been injured a short time before by a brick falling upon her head from a building which she was passing. She had had five convulsions before she was brought to the hospital, and, after admission, vomited twice, seemed dull, and was evidently suffering from the condition of so-called cerebral concussion. There was a longitudinal, contused wound over the synciput, and at the anterior extremity of the wound the finger readily recognized an irregularly depressed fracture, one side of the broken part being sunk below the level of the rest of the skull, while the other side was elevated, the fragment, too, being slightly movable and obviously unimpacted.

As whatever risk would follow the exposure of the membranes had already been incurred, the wound was enlarged as much as was necessary, and the detached fragment, which in shape corresponded pretty closely to the form of a right-angled triangle, and the sides of which measured respectively fourteen, nineteen, and twenty-one sixteenths of an inch, was removed, this being readily accomplished with the elevator and forceps, and without enlarging the opening which already existed. The membranes of the brain were found to be uninjured, and could be felt and seen pulsating synchronously with the heart's action at the bottom of the wound.

[Specimen exhibited.]

The wound was then closed, but not too tightly, with lead-wire sutures and gauze and collodion, the patient put to bed in a darkened room, and cold cloths and ice-bags applied to the head. Small but frequently repeated doses of calomel and Dover's powder were ordered; care was taken to evacuate the bladder at suitable intervals by means of the catheter, and, after the first day, the patient was regularly and systematically fed every two hours with milk and lime-water. For some days she lay perfectly quiet, complaining of no pain, rational, but indisposed to speak, and curled up in the peculiar position so characteristic of the second stage of cerebral concussion.

It is unnecessary to give all the details of treatment. The bowels were moved every two or three days, by the aid of enemata. Quinia was given on the ninth day, at first tentatively, and afterwards in larger doses; the patient's diet was gradually increased, and on the nineteenth day she was moved into the general ward as thoroughly convalescent. She is now quite well, her wound having been entirely healed for nearly a fortnight.

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2. *Compound, depressed, impacted fracture of the skull, without symptoms of intra-cranial injury until the sixteenth day; trephining; death from cerebral abscess on the thirty-second day.*

Daniel M., 7 years of age, was admitted to the Children's Hospital about midnight on September 8th, 1876, having a few hours before received a severe blow on the forehead from a shovel wielded by one of the participators in a personal combat, in which his reputed stepfather had engaged with other denizens of the tenement-house which served as his home. I saw him about an hour after his admission, and found a starred and much retracted wound of the forehead, leading to a slightly depressed, camerated, impacted fracture of the right side of the frontal bone. The patient was in very good general condition, and had, and had had, absolutely no symptoms of any injury to the brain.

As there was no indication for operative interference, the wound was simply closed with adhesive strips, the patient put to bed with an ice-bag to his head, and placed upon constitutional and dietetic treatment, as in the preceding case. On the fifteenth day (September 23d) he appeared to be so well that the ice-bag was removed, his diet was somewhat increased, and he was moved into the general ward. The next morning, the sixteenth day since the reception of the injury, the patient vomited once, apparently from having indulged his appetite too freely, but seemed otherwise as well

as usual. In the afternoon, however, he was suddenly seized with convulsions, principally of the left side, and accompanied with complete unconsciousness, biting of the tongue, and slight frothing at the mouth. I was immediately sent for, and, on arriving at the hospital, explored the wound, and found slight indications that the external table of the skull at the seat of fracture was beginning to separate. The crown of a small trephine was then applied, half over the fractured part and half on the sound skull, and as soon as the outer table had been penetrated, a little pus welled up alongside of the instrument. A disk of the outer table came away in the trephine, and the corresponding portion of the inner table was removed with the forceps, when no difficulty was found in elevating the remainder of the depressed bone. The convulsions, which had persisted all through the operation, now instantly ceased, the dusky hue of the countenance quickly disappeared, and it was evident that the imminence of death had, for the time at least, been averted. The membranes pulsated synchronously with the heart's action, and were seen to be intact. The patient was now again placed in the darkened room, the ice-bags reapplied, and in fact the original treatment of the case repeated *de novo*. With the exception of a little fever, everything seemed to go well for about a week, when the tongue became and continued furred, and vomiting set in, at first only once or twice a day, but afterwards more frequently. The patient now began to emaciate, his pulse was preternaturally slow, and he became soporose, though always easily roused and perfectly rational when spoken to. On the thirteenth day after the operation (twenty-ninth since the injury) these symptoms were more marked, the tongue had become dry, and the patient occasionally screamed out, complaining, too, of constant headache. The next day (October 8th) I noticed for the first time that the tongue was protruded to the left side. The day following there was slight facial paralysis, and still a day later (the last of life), decided left hemiplegia. Death ensued a few hours after my last visit, the patient gradually becoming weaker and duller, though not until the end completely comatose.

An autopsy was made about fifteen hours after death by Dr. Chapman, the coroner's physician. The head only was examined. The scalp having been turned down, the seat of fracture was revealed, the portion of bone which had been depressed being found in its normal position, and the perforation made by the trephine being evenly filled with granulations. When the skull-cap was removed, the membranes were found congested and their veins engorged with blood; but they were entire, and there was but very slight evidence of meningitis, and that chiefly on the left side. A large abscess was found in the anterior lobe of the right cerebral hemisphere,

covered, in the part nearest the fracture, by a layer of healthy brain-substance fully half an inch in thickness, but approaching nearer the surface at a point lower and farther to the right. The ventricles on both sides contained more fluid than usual, but were otherwise normal.

[Specimen exhibited.]

Remarks.—These cases, interesting in themselves, are particularly so as serving to illustrate some important points in the pathology of head-injuries. In the first place, they furnish examples of the deceptive character of these lesions, and of the rule often insisted upon, that the amount of damage done to the brain is apt to be inversely proportionate to that inflicted upon the skull.

The subject of the first case, Mary L., was injured by a heavy body falling from a great distance, and of course with great momentum; and the immediate effects of the blow were seen in the entire separation of a large fragment of the skull from its attachments, and in the early and repeated convulsions, the subsequent vomiting, and the long persistence of the state described by Mr. Erichsen and other writers as "cerebral irritation," but which, it seems to me, should be regarded as simply the second stage of the condition known as cerebral "concussion." At the same time, as the sequel showed, the force of the blow had been mainly expended upon the skull; the shock to the brain, though rude, led to no permanent organic change; and the patient's convalescence, though slow, was uninterrupted.

In the second case, on the other hand, the cause of the injury was comparatively slight; the skull was broken indeed, but the fragment was not separated, and but slightly depressed. There were at first absolutely no symptoms of intra-cranial lesion; and when the occurrence of suppuration between the inner and outer tables at the seat of fracture gave rise to convulsions, and required the application of the trephine, the membranes of the brain were found entirely intact, and with the elevation of the depressed portion of bone the convulsions instantly and definitively ceased. Yet, at the moment of injury, the skull measurably resisting the force of the blow, its effects were transmitted indirectly (by the *contrecoup* or "counter-stroke" of the older writers) to the substance of the cerebrum itself, where at a very considerable depth some slight laceration or contusion of the brain-substance occurred,—laceration so slight as to give no sign of its presence until several weeks afterwards, and yet sufficient to prove the starting-point of the large abscess which ultimately brought the case to a fatal termination.

Again, the second case is of interest as bearing upon the question of

diagnosis between intra-cranial inflammation and suppuration, between meningitis and cerebral abscess. As is well known, it is often quite impossible to distinguish between these conditions, so that, as one of the best modern writers on head-injuries (Mr. Jonathan Hutchinson) justly remarks, if we adopt the rule of trephining in all cases in which, after bruise or fracture of the skull, the patient has become hemiplegic or comatose, with inflammatory symptoms, we will operate in twenty cases of arachnitis for one in which we will find any pus to be evacuated. And it is equally impossible in most cases to determine the seat of suppuration, even when it is believed to be present.

In the case under consideration, however, I was able by careful observation of the symptoms, and of the order in which they were developed, to satisfy myself pretty conclusively that the patient was suffering from a cerebral abscess, and that its position was remote from the point of external injury; at the same time, I hoped against belief, and thought it but right, on the chance of my being mistaken, to adopt such treatment as would have been suitable in a case of meningitis.

I believed that the symptoms were due to deep-seated abscess, because, first, I knew that at the time of the operation the membranes had been uninjured, and I had daily watched them pulsating at the bottom of the wound, until the healthy granulations which covered them had filled up the perforation made by the trephine and had begun to creep over the neighboring portions of the skull; this was of itself almost enough to negative the idea of meningeal trouble, whether simply inflammatory or suppurative. Secondly, the trophic much preceded in time the pressure symptoms. For days before there was the slightest evidence of paralysis, the patient had been rapidly emaciating, and was evidently perishing from some destructive visceral affection; the first deviation of the tongue, it will be remembered, was noticed but two days before death, drawing of the mouth a day later, and general hemiplegia but a few hours before the fatal issue; this state of things obviously pointed to the brain itself rather than the membranes as the seat of change, for when the meninges are affected paralysis is usually a comparatively early symptom.

Other diagnostic points were the absence of fever and delirium, the slow pulse, and the nature of the pain, which was a dull aching, seldom complained of unless the patient was questioned, and not the intolerable, mind-absorbing agony of meningeal inflammation.

I say nothing of the treatment of these cases, because, though suggesting questions of interest, therapeutics are, in my judgment, out of order in the discussions of this Society.

Dr. William Pepper said, in connection with this case, he desired to put on record a case which he had seen recently in consultation with Drs. Stewart and A. H. Smith, of this city. The absence of any complete previous history diminishes the interest of the case, while as bearing upon the diagnosis it possesses considerable interest. The patient was a government contractor, about 30 years of age, a native of Illinois, but was in this city on business. He first complained of violent neuralgia over the left eye, for which he consulted Dr. Stewart, who gave him large doses of morphia and quinia, with temporary relief. A few days later pain returned, and soon after he had a convulsion, which was followed by a state of great nervous excitement. This was gradually replaced by dulness and deepening stupor. It was nearly forty-eight hours after the attack when Dr. Pepper saw him for the first time. His pulse was then regular, but there was paralysis of the right arm and leg, and partially of the right side of the face; there was no paralysis of the eyelids, but the patient was completely aphasic, while he could be made to understand by the use of signs. His pulse kept falling, he had one or two more general convulsions, but after this no more severe ones, although there were slight convulsive movements limited to the right side of the body. Towards the close there were also frequent attacks of convulsive movements of the muscles of the face, presenting themselves chiefly in the shape of quick twitchings of the muscles about the mouth on the right side, and perhaps on the left slightly. Later followed deepening stupor terminating in unconsciousness, continued dropping of the pulse until it fell to 65, 60, and 48, remaining regular; retraction of the head, inability to swallow, and loss of power over the rectum.

The treatment was based on the supposition that there was a syphilitic tumor pressing upon the under surface of the anterior lobe of the left hemisphere. There were, however, no other signs of constitutional syphilis; vision and hearing were unimpaired, he had good teeth, there were no scars or loss of substance of the nose, no enlarged glands, no mark of secondary eruption or periostitis of the superficial bones. Still, as there was no previous history obtainable, and no evidence of injury to the skull, the diagnosis of tumor was made. At the *post-mortem* examination an old encysted abscess was found between the dura mater and the surface of the brain over the left frontal bone, extending under the surface of the left hemisphere, and producing a strongly marked depression of the fissure of Sylvius and adjacent parts. The membranes were thickened and dense. There was no lesion of the brain-substance between them, but a slight softening of the most superficial layers of the cineritious substance. The

cavity contained five or six ounces of fetid pus, but there was no injury to the bones of the skull. The track of the left meningeal artery was seen to be the seat of caries, so that when compared with the track of the artery on the opposite side, it was found to be three or four times as large and with a porous surface of bone.

It was subsequently learned from the family that he had been living away from home, and nothing was known with regard to any accident which may have occurred to him.

Large doses of iodide and bromide of potassium diminished the severity of the convulsions, but the case ultimately terminated as above.

October 26th, 1876.

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3. *Amputation of leg after compound fracture, causing necrosis of tibia and fibula and disease of ankle-joint.*

By Dr. T. B. Reed, for Dr. Reynolds.

T. M., æt. 39, born in Ireland, occupation a gardener, was kicked by a horse thirteen years ago, causing a depressed fracture of the tibia of the right leg in the lower part of its middle third, and a compound comminuted fracture of the fibula at about the same point.

The wound remained open nine months, and the tibia was then cut down on and several pieces of dead bone were removed (parts of the fibula) by Dr. Packard, after which the leg was entirely free from pain until three years ago, when he began to have severe pain in the right ankle, which he supposed was rheumatism, and for which he was treated for some time. Afterwards he was treated in the Episcopal Hospital for periostitis.

Receiving no relief, he left the hospital, and was then under the care of Dr. Bolling, who consulted Dr. Hodge. Dr. Hodge cut down on the lower end of the tibia, giving vent to confined pus. This was followed by four days' freedom from pain, after which it returned and was more severe than ever before. Dr. Hodge was again called, and advised sending him to the Presbyterian Hospital. He was admitted April 19th, 1874. The leg was poulticed for a week, when Dr. Hodge cut down again to the lower end of the tibia, and sawed deeply into it with Hey's saw, and at the same time removed about one inch and a half of the internal saphenous nerve, just above the internal malleolus.

This gave him immediate relief, and after remaining in the house forty-two days he was discharged cured.

He remained free from pain or any symptom of disease until about the 1st of September, 1876, when he fell and sprained the same ankle. This was followed by pain of an intermittent character, which continuing to get worse, he again went to Dr. Bolling, September 12th, who consulted Dr. Hunt, and again his disease was pronounced periostitis. The limb was painted with iodine for two weeks, and he then came into the Presbyterian Hospital, unimproved, September 26th, 1876. At this time there was some redness of the skin, and he complained of severe pain, which was worse at night.

September 30th, 1876.—The leg was blistered over the painful part; was followed by abscess, which opened and was found to lead into the tibia at a point two and a half inches above its lower end. The limb was then poulticed. Following this he experienced some relief, but soon began to get worse, and, being unimproved, was again blistered, November 12th, over the front of the ankle. This was followed by a large abscess over the internal malleolus, which was opened November 27th, evacuating a large quantity of pus, followed by considerable hemorrhage. This gave him temporary relief. He again became worse, and in a consultation of the surgical staff of the hospital, December 9th, it was decided to amputate the leg. The operation was performed by Dr. Reed, the amputation being made in the upper part of the middle third.

Examination.—The skin was found to be firmly adherent to the tibia in several places, being the cicatrices of his original injury and of more recent abscesses. There was an opening through the skin and into the tibia about two and a half inches above its articular margin. Below, just over the end of the tibia, there was a large, irregular ulcer, communicating on the inner side with the sac of the last abscess over the internal malleolus, and on the outside leading down into the joint.

Tracing down the internal saphenous nerve, it was found to be hypertrophied, and at a point three inches above the malleolus it spread out into a broad fan-shaped expansion of firm fibrous tissue, which being dissected up about an inch was found to be firmly attached to the deep fascia; below its continuity was lost or destroyed by the abscess over the malleolus. The internal saphenous vein was found to lead into the sac of the abscess, the end being open.

The whole anterior edge of the lower end of the tibia was necrosed, opening into the cavity of the bone, and communicating with the opening above. The interior of the bone was diseased about one inch above the upper opening, or three and a half inches above the lower end of the bone. Several points on the articular face of the astragalus, and its whole

anterior edge, corresponding to the diseased part of the tibia, were necrosed. There was also some necrosis of both the tibia and fibula at the articulation.

Dr. Hodge said that he had seldom seen any one suffer more pain than this man did before the operation by himself two and a half years ago. After sawing deeply into the tibia and removing a section of the internal saphenous nerve, the patient was free from pain and could do active work until last September. Since then all this destruction of bone must have occurred. *December* 14*th*, 1876.

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4. *Osteitis of the tibia, with abscess after amputation.*

By Dr. H. Lenox Hodge.

The patient from whom this specimen was taken is 14 years of age. In June, 1875, she suffered from severe pain in the great toe of the left foot. Ulceration took place on the inner side of the foot, and in July pieces of bone were removed. She was admitted to the Homœopathic Hospital of this city, and in September the leg was amputated in the lower third. The wound healed in less than three weeks, but shortly afterwards re-opened, and continued to discharge. She was admitted to the Presbyterian Hospital, and, one by one, at different times, six ligatures were removed. The ligatures were of silk, and both ends had been cut off short at the time of the amputation at the Homœopathic Hospital. The wound still remained unhealed, and was pressed upon by the extremity of the tibia, which was painful to the slightest touch. On the 9th of March, 1876, I excised the extremities of the tibia and fibula. It was found necessary to remove about three inches of bone. The wound healed rapidly, and when last heard from the patient remained well.

There was a large abscess in the lower portion of the tibia measuring about one inch in diameter and about one inch and a half in length. The bony walls were very thin in front, and somewhat thicker behind. On the anterior surface two separate orifices existed, communicating with the abscess. Each orifice was oval, measuring three-quarters of an inch by half an inch. At the lower extremity of the bone the cavity was open to its full extent,—about one inch in diameter. The shaft of the tibia was much softened for about an inch above the abscess.

The fibula appeared to be healthy. *December* 28*th*, 1876.

5. *Osteitis of the femur, showing ulcerations along the shaft and through the neck without injury to the articular cartilages of the hip-joint.*

By Dr. H. Lenox Hodge.

The girl from whom this specimen was removed was 15 years of age. She had always been delicate, and there was a family history of consumption. She began to complain of her hip in August, 1875, and was admitted to St. Joseph's Hospital in October, 1875. She remained there eight weeks, and upon leaving fell from a street passenger car, and the pain at once became worse. She was then admitted to the Presbyterian Hospital. She was extremely anæmic and weak. Her skin was almost perfectly colorless, and her pulse very rapid. She had hectic fever, with profuse perspirations. She died in March, 1876.

The neck of the femur was ulcerated through, and but little remained of the head, while the articular cartilage remained sound, and was attached to the neck by the periosteum on the under surface. The articular cartilage on the acetabulum, and even the round ligament, was not diseased. The osteitis of the femur extended along the shaft for half the length of the bone, showing itself in softening and in many ulcerations upon the surface. There were also exostoses around the base of the great trochanter.

January 11th, 1877.

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6. *Articulating surfaces of femur and tibia from a case of excision of the knee-joint.*

By Dr. John Ashhurst, Jr.

The patient, a lady 30 years of age, sent to Dr. Ashhurst by Dr. Massey, of West Chester, had suffered from disease of the knee-joint for twenty-three years. The limb was bent almost to a right angle, frequently painful, and very sensitive to cold. The tibia was by measurement four inches shorter than that of the opposite side, and the whole leg and foot smaller than their fellows. Several depressed cicatrices marked the site of former abscesses. The patient walked with difficulty with the aid of a crutch and of a shoe provided with a sole seven inches in thickness, and, finding her condition yearly becoming worse, was willing to submit even to amputation if that should be thought necessary.

As, however, her general health was impaired, and her limb showed rather the effects of past disease than the presence of any actively morbid

condition, Dr. Ashhurst thought the case a suitable one for excision, and accordingly resorted to that operation on January 8th, 1877. The intra-articular structures were found almost entirely destroyed, the inner condyle of the femur being firmly united by bony anchylosis to the tibia, while the latter bone presented a large spot of softened and carious tissue. The soft structures in the popliteal space were so much contracted that, after the removal of as much bone as was thought proper, it was necessary to divide the external hamstring tendon in two places in order to bring the limb into a straight position. The progress of the case since the operation had been entirely satisfactory. *January 25th*, 1877.

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7. *Osteo-sarcoma of femur.*

By Dr. John Ashhurst, Jr.

This specimen of osteo-sarcoma of the right femur was removed by hip-joint amputation from a young man 22 years of age. The disease first appeared fourteen months previously, above the inner condyle of the femur, and rapidly increased in size, spreading upwards, also, towards the groin, until at the time of the operation the whole thigh was enormously enlarged. The tumor was quite hard, the superjacent tissues being tightly stretched over it, and the subcutaneous veins much distended. The circumference of the diseased (right) limb was twenty-six and a half inches, and that of the left limb only sixteen inches. Amputation at the hip-joint was performed on February 28th, and the progress of the case since then has been perfectly satisfactory. The weight of the tumor, after all the soft parts had been removed, was fourteen pounds.

A microscopic examination of the peripheral portion of the growth, made by Dr. Nancrede, showed the tumor to be a sarcoma, the prevailing elements being round and spindle-shaped cells, though no doubt the deeper portions would have been found to contain myeloid or giant cells as well.

A plaster cast was also exhibited, showing the appearance of the limb before amputation. *March 8th*, 1877.

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8. *Intracapsular fracture of femur—Thrombosis of left femoral vein extending to vena cava.*

By Dr. J. C. Wilson.

The specimen was removed from the body of a gentleman aged 67, who weighed one hundred and sixty-seven pounds. He fell upon the sidewalk,

January 24th, and received the full force of the blow upon his left hip. Shortly afterwards he was etherized and examined by Dr. Wilson and Dr. J. H. Brinton.

The foot was markedly everted; there was a shortening of the limb of apparently one-half inch; the arc described by the great trochanter in rotation seemed to be of shorter radius than that of the opposite side; after free movement, crepitus was felt; it was, however, obscure.

A diagnosis of fracture (intracapsular?) of the neck of the femur was made.

The treatment selected was weight-and-pulley extension, and counter-extension by elevating the foot of the bed. Sand-bags were employed.

Four days afterwards, signs of pelvic cellulitis supervened. These shortly subsided. February 12th, the leg became swollen, tense; there was occlusion of the femoral veins, and inflammatory infiltration of the tissues in the line of the great vessels. Fever set in, the temperature rose to 102° Fahr., and remained between 99½° and 102° until he died, March 26th. A bed-sore had formed over the sacrum. The urine was not albuminous. Liver-dulness was enlarged. There were no pulmonary symptoms. Heart-sounds feeble; the first valvular. The pulse feeble; no murmur.

The *post-mortem* examination, made twenty-six hours after death, confirmed the diagnosis of intracapsular fracture. In addition, the heart was found fatty, the lungs slightly adherent but otherwise normal, the liver fatty, and the kidneys cirrhotic. There were evidences of inflammation on the inside of the pelvis opposite the acetabulum, thrombosis of the left femoral and iliac veins extending to the vena cava, as shown in the specimen, with inflammatory infiltration of the tissues surrounding these vessels.

Dr. C. B. Nancrede said that this case of thrombosis of the iliac vein was interesting in connection with the paper he read before the Society a year ago, furnishing an illustration of what he then tried to prove. Here is an injury, a blow over the region of the trochanter major. We know that even a slight blow will produce clotting in the smaller veins, and inflammatory action will be set up by these—the venous clots—in the surrounding tissues. In the venous clot we have present one of the factors necessary for the formation of a clot,—viz., the fibrino-plastin, in the shape of the blood-cells. Now let blood containing an excess of the second necessary factor—namely, *fibrinogen*—resulting from the retrograde metamorphosis of tissues, etc.—reach the preformed clot containing the fibrino-plastin, and it will go on extending until no more blood running

from the inflamed spot can reach it. In the case before the Society that point should be about the brim of the pelvis, since normally all the blood from the injured territory would be emptied into the femoral below this point.

Upon examining the specimen, however, we find that it extends still higher. How can this be explained? In one of two ways: either blood containing retrograde matter was conveyed from the acetabulum through the pelvic bones, and thus was poured into the external iliac through the internal iliac vein, or, what is still more probable, the clot, irritating the tissues at the brim of the pelvis, owing to the greater pressure due to the subjacent bone, established a new depot for the absorption of inflammatory products, and thus extended the clotting until all venous blood-supply was prevented from reaching the thrombosed vein from the inflamed extremity. This second inflammatory depot is not assumed for the purpose of explanation, but is specially noted by Dr. Wilson in his remarks.

Dr. Hodge said the specimen was interesting from several points of view. First, the fact of embolism being present was of great interest as regards the origin of the clot. A slight cause will produce a clot when least expected. He recalled a case which occurred at the Presbyterian Hospital, in which a leg had been amputated by Dr. T. B. Reed on account of disease of the ankle-joint. When the patient had almost recovered, and the wound was nearly healed, the opposite thigh became very much swollen and tender over the femoral vein, and there was every reason to suppose a clot had formed in it. This condition presented itself immediately after the man was first lifted from his bed. He recovered.

Another point of interest was in reference to the formation of bony nodules in the capsule around the joint. They do not occur uniformly, and their explanation is more or less difficult. He thought the most reasonable explanation attributed them to fragments of periosteum displaced at the time of fracture, just as the periosteum produces bone after transplantation.

Another point of interest is the apparent injury to the inner surface of the pelvis opposite the acetabulum. He thought this could be accounted for in two different ways. It was possibly due to the direct effects of the original injury, as the acetabulum may be broken by the head of the femur driven forcibly against it. Or this condition may arise from inflammatory action causing softening of the bone.

Still another point, Dr. H. thought, was that notwithstanding the absence of callus, which is characteristic of injuries in this locality, a great degree of firmness exists. Whether this is due to an attempt at union, or

whether this is one of those rare cases of partial fracture of the neck of the femur, can only be determined by sawing the bone.

A final point of interest, he thought, was the preservation of the round ligament, which from its direction, as the members of the Society may notice, bears out the inference that one of its uses is to aid in the support of the body by bearing a portion of its weight in the erect position.

Dr. Wilson said that the crepitus, the limitation of the arc of a circle described by the trochanter major, together with the shortening, led them to believe the fracture was a complete one.

Dr. Nancrede thought that there was no evidence of any union. The limb had never been stepped upon, and therefore there was none of the ordinary displacement usually seen, and the apparent union was only the result of the interlocking of the fragments.

He thought that if he had taken a few more steps there would have been no doubt about the presence of a complete fracture. Repair was impossible with such interruption to the circulation as existed. The edges of the fragments were as sharp as if broken but yesterday, and, as is well known, the first step towards union should be a proliferation of the connective-tissue cells of the adventitia of the Haversian vessels. This would induce absorption of the earthy matter of the bone, and rounding of the edges of the fragments would ensue. *April 12th*, 1877.

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9. *Caries of the sacrum and great trochanter of the femur.*

Verbal communication by Dr. H. Lenox Hodge.

I have lately made a *post-mortem* examination in an interesting case, but was unable to obtain the specimens for presentation to the Society.

A young man died May 18th, at 21 years of age. When 4 years old, he had coxalgia (left side), and had been lame ever since. When 14 years of age, an abscess formed at the hip, and after a time healed. In 1875 and again in 1876 other abscesses formed. The last opened near the anus. When examined in September, 1876, the left limb was found flexed on the body nearly at 45°, and adducted. There was shortening to the extent of four inches. A large abscess was then pointing between the great trochanter of the femur and the sacrum. This abscess extended to the great trochanter of the femur, to the edge of the acetabulum, and to the sacrum. The trochanter was found to be carious, and was removed with parts of the edge of the acetabulum, and at several times pieces of

bone were removed, as they loosened, from the sacrum and what remained of the head and neck of the femur. The patient apparently improved, and was able to be out of bed, but in the spring, about March, chronic diarrhœa began, and he died in May. The *post-mortem* examination showed that the disease of the sacrum extended still further, and the abscess passed through the sciatic notch to the sub-peritoneal tissue, but did not communicate with the peritoneal cavity or with the bowel. There was chronic peritonitis in the region of the pelvis, ascites and tuberculous deposits in the mesentery and in both lungs. *May 24th*, 1877.

II.—THE DIGESTIVE APPARATUS.

1. *Typhoid fever; supervention of hectic fever at thirtieth day; evidences of septic poisoning; death from exhaustion; lesions of intestinal glands; ulcerative endocarditis; infarction in spleen; abscess of pancreas; suppurative parotitis.*

By Dr. William Pepper.

Mrs. M., æt. 45, enormously fat and heavy, was admitted to the University Hospital about the twelfth day of a severe attack of typhoid fever. Extreme prostration and profuse diarrhœa were the most serious symptoms. After progressing fairly well until about the thirtieth day, irregular but severe hectic appeared, diarrhœa returned, with horribly fetid stools, and numerous ulcers formed over the surface of the body. These were preceded by small pustules with livid red bases. Rapid swelling of both parotids developed. For a time improvement seemed to follow the free use of salicylic acid; but, despite the arrest of the diarrhœa, exhaustion progressed, and death occurred on the forty-second day.

At the *post-mortem* examination, there were quite numerous ulcers in the ileum, chiefly occupying the site of Peyer's patches, but sometimes that of solitary follicles. They were all clean, without elevation of their borders, and reached down to the muscular coat. The mesenteric glands were moderately enlarged, with excess of pigment. There was a large, wedge-shaped infarction in the spleen, of yellowish color, and evidently about to disintegrate. There was diffuse suppuration of the head of the pancreas, with breaking down of the gland-tissue. The enlarged parotid glands were also in a state of diffuse suppuration. There were no infarctions in the lungs, liver, or kidneys.

The heart was enlarged. Under one leaflet of the mitral was a calcareous nodule. The leaflets were thickened (old), and on their free borders were two small elevated ulcers. There was also slight thickening, but without vegetations or ulceration, of the aortic leaflets.

Dr. R. M. Bertolet remarked that it was impossible to say at this stage whether it was the recent or old endocardial change which caused the

infarctions in the spleen and integument. At any rate, it is rare to have evidences of minute infarctions on the surface and only on the spleen, while the kidneys escaped altogether. On the other hand, we would have expected to find multiple miliary abscesses in the kidneys. He would, however, inquire of Dr. Pepper whether he regarded the numerous points of ulceration of the skin as embolic in their origin or due to local thrombosis.

Dr. Pepper suspected this was their mode of origin, but was not certain. He had observed the same kind of spots on the skin where there were no causes like these to account for them. It is quite possible, however, that they were preceded by thrombosis or minute embolisms, and that the same process which caused the patch of disease in the spleen caused also the necrotic abscesses on the back. Careful examination showed that there were absolutely no infarctions in the liver or kidneys.

September 14*th*, 1876.

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2. *Cancer of the stomach.*

By Dr. Louis Starr.

F., æt. 24, a sailor, was admitted to the Episcopal Hospital on May 2d, 1876. His family history was healthy. He had always been temperate, had never had syphilis, and had enjoyed good health until the spring of 1873, when he began to be troubled with pain in the epigastrium, and noticed that his ordinary duties aboard ship were more fatiguing than before; nevertheless, he was able to keep at work up to February, 1876. After this date the pain grew much more severe, he lost appetite, weight, and strength, and his bowels became constipated, his abdomen slightly distended, and his complexion muddy. There was also occasional vomiting, the matter ejected always consisting of food and mucus, and never containing blood. The constipation and distention were readily relieved by the administration of purgatives and the application of cold compresses. The pain and prostration, on the other hand, increased, and for a short time before coming into the hospital he had been unable to leave his bed. When admitted, he was greatly emaciated. His skin was harsh and sallow, though the conjunctivæ were clear and the eyes peculiarly bright. The tongue was smooth, the mucous membrane of the mouth pale, the appetite poor, and there was slight nausea, but no vomiting. The pain, which was almost constant, was situated in the epigastrium, and at times extended from this position towards the back. It was described as burning or

twisting in character, and was augmented by taking food. The abdomen was scaphoid, the pulsation of the abdominal aorta could be distinctly seen and felt, and there was tenderness on pressure in the epigastric and umbilical regions. No tumor could be discovered. The heart and lungs were healthy.

For a time the patient seemed to be benefited by treatment, his appetite and strength returning, and the pain becoming less marked. He soon relapsed into his former condition, however, and there was no further interruption to the steadily progressing weakness and loss of flesh. Numerous attempts were made to discover an abdominal tumor, without success. During the last two weeks of his life there were several short attacks of diarrhœa, and during the last three days slight vomiting. Death took place on June 2d.

The *autopsy* was made twelve hours after death. All the viscera were found to be normal except the stomach and large intestine. The stomach was adherent over its upper and posterior surfaces to the neighboring parts, and its interior was occupied by a cancerous growth. This involved the lesser curvature, and extended over the greater part of the anterior and posterior walls of the organ, the edges almost meeting below. The posterior two-thirds of the growth had undergone softening, leaving a large, irregular, and very ragged ulcer, surrounded by a thick, everted, margin, while the anterior third was composed of hard nodules, some of which were nearly as large as English walnuts. The tissues immediately beneath the position of ulceration were so much altered in texture as to be torn by the slight traction that was made in removing the viscus. The cardiac and pyloric orifices were perfectly patulous. There was no cancerous deposit in the fundus or along the greater curvature, but the mucous membrane in these situations was thickened and covered with tough mucus.

The large intestine was intensely congested.

The chief point of interest in this case seems to be the disproportion between the extent of the disease and the symptoms that were present during life; still, the absence of an abdominal tumor and the rarity of vomiting may be easily accounted for, the first by the position of the growth and the presence of adhesions preventing any descent of the stomach, and the second by the fact that neither orifice was obstructed.

September 14*th*, 1876.

Report of the Committee on Morbid Growths:

"The specimen is one of *scirrhus ventriculi.*" *October* 26*th*, 1876.

3. *Obstruction of the intestines, due to contraction caused by great accumulation of fat around the descending colon; peritonitis.*

Dr. H. Lenox Hodge reported the results of a *post-mortem* examination made upon a woman who died from obstruction of the intestines and peritonitis.

She was a mulatto, about 58 years of age. Her general health had been good, although she was exceedingly fat. About three weeks before her death she had fallen heavily from a chair, striking her abdomen. During the last two weeks, she had obstinate constipation and bilious and stercoraceous vomiting. The abdomen was tympanitic, but not greatly distended. Injections given with Davidson's syringe came away quickly, and even when given in large quantities returned perfectly clear, without being discolored with fæces. A large tube could be passed high up the rectum, and when the injection was thown up this tube it brought away small quantities of fecal matter, and the fluid came away discolored.

The *post-mortem* examination was made thirty-six hours after death.

The abdominal walls were very thick and fat.

The omentum was exceedingly thick, being loaded with fat.

There was extensive peritonitis over the region of the small and large intestines. There were bands of lymph binding together the folds of the small intestines. The most severe inflammation was at the beginning of the jejunum. The coats of the intestine were there of a chocolate color.

The ascending and transverse colon were smaller than usual, but presented the normal sacculated appearance. Their epiploic appendages were, however, enormous. The descending colon was apparently buried in the fat of the epiploic appendages. It could not be distinguished except by section. A section was made just above the sigmoid flexure; the coats were found very thin, and the calibre of the tube was so small as scarcely to admit the forefinger. Below this point the intestine was empty; above it, a hard mass of fæces about the size of a walnut filled the colon, and could only be pressed out by force. The muscular power of the intestines could not have moved this mass any farther in the narrow canal. The injections had washed out the bowel below, but had failed to make any impression on this mass.

The rectum was also small, but everywhere could receive the forefinger.

The walls of the uterus were filled with sub-serous and sub-mucous fibrous tumors. It occupied a large portion of the pelvis, but there was

room enough for the bladder and rectum without any pressure being made upon them.

The gall-bladder was filled with gall-stones. *November 23d*, 1876.

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4. *Extensive ulceration of the small intestine, following obstruction of the bowel.*

By Dr. R. G. Curtin, for Dr. James F. Wilson. History by Dr. Wilson.

E. M., æt. 38 years, the mother of six children. At the commencement of her last illness she was about seven months pregnant. She had had no unusual symptoms prior to those of obstruction, which presented themselves on the 13th of September, 1876. These were obstinate constipation, stercoraceous vomiting, and pain in the right iliac region. These symptoms increased until the 17th of September, when she had a premature labor, after which the symptoms of obstruction were immediately ameliorated. The next day she had a small stool, although the vomiting was not so severe, but still continued. She would retain food for several days, then the vomiting would be frequent for a day or two. The bowels were quiet, but not confined. Pressure in the epigastrium caused her intense pain. These symptoms continued. She grew weaker and weaker. Emaciation became extreme until the 12th of December, when she died. She had complained of very little pain in the lower part of the abdomen for two months before her death.

Post mortem.—All the organs were pallid, but otherwise apparently healthy, except the small intestine, which was found to be in a state of ulceration for about eight inches, the ulceration commencing about twelve inches above the ileo-cœcal valve and encircling the whole intestine. At the upper and lower end of the ulceration the intestine was very much contracted, so that it was with difficulty that the end of the little finger was passed through these constrictions. The ulcerations presented very much the appearance of those of dysentery. Peyer's patches above and below the ulceration were not affected. At several points the ulcers were almost entirely through the intestine, and the peritoneum at these points was adherent to other portions of the intestine.

She had had at no time any symptoms of dysentery. Probably the amelioration of the symptoms following labor could be accounted for in this way. The uterine tumor, rising upwards, bent the intestine on itself

at the point of constriction, and thus prevented the passage of the contents of the bowels. *December 14th*, 1876.

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5. *Abdominal cancer, with partial obstruction of the transverse colon and sigmoid flexure by adhesions; double uterus.*

By Dr. Louis Starr.

Bridget G., æt. 37, single, by occupation a servant, was admitted to the Episcopal Hospital on September 1st, 1876. Her brother had died of phthisis, but in other respects her family history was good. Her own health was very fair up to 1870, when the menstrual flow, which before had been perfectly normal, stopped, and she began to have occasional attacks of acute dyspepsia. From this time until the early part of July, 1876, though never ill enough to be confined to bed, she suffered considerably from indigestion, abdominal pain, and constipation. After the latter date the symptoms of gastro-intestinal disturbance became more marked, her appetite was greatly impaired, and the bowels were very sluggish, six or seven days sometimes elapsing without an evacuation; these attacks were attended with twisting pain and irregular tympanitic distention of the abdomen, and always passed off with diarrhœa, preceded by vomiting, the matter ejected from the stomach consisting of mucus, and whatever food happened to be in the viscus. When the patient came under my observation, about one week after admission, she was weak and somewhat emaciated, her skin was sallow, her appetite was poor, there were frequent eructations of flatus and acid liquid mingled with fragments of partially digested food, the bowels were constipated, and there was a sense of weight and fulness at the epigastrium. There was slight meteorism even immediately after a stool, which occurred, as a rule, once in every forty-eight hours, but while the bowels were confined there was decided distention of the ascending and transverse portions of the colon; this distention was not uniform, involving only sections of the intestine, and causing isolated projections of the abdominal wall, which varied in position from time to time. Percussion was tympanitic over the whole surface of the abdomen, except on the left side a short distance below the costal border, where a small, firm, slightly movable mass could be felt, here there was dulness. The heart and lungs were healthy. There was no vaginal discharge, and the urine was voided freely, and on examination was found to be unaltered in composition. Throughout September the prostration and emaciation

steadily progressed, at the same time the bowels were opened more frequently, great relief being obtained by copious injections, and there was less vomiting and abdominal distention. On October 1st complaints were made of cough, and pain in the left chest; these symptoms were not severe, attracted very little attention, and in a few days disappeared. Two weeks later, however, it was noticed that the respiration was hurried, and on making a careful exploration of the chest, the physical signs of an accumulation of liquid in the right pleural cavity were detected. The effusion slowly increased until, on November 3d, there was flatness over the whole of the right chest, from apex to base, the abdomen was also much more tympanitic than before, occasionally becoming very greatly distended, and these two conditions together produced considerable dyspnœa. On November 24th the shortness of breath had become so constant and severe, that it was thought best to aspirate the chest. The operation was performed by Dr. Packard; nearly eight pints of serous fluid were withdrawn, and the respiration at once became more easy. From November 24th to December 9th, notwithstanding the fact that the bowels were moved almost every day, sometimes spontaneously and sometimes by the aid of clysters, the abdomen, especially along the course of the ascending and transverse colon, was constantly in a condition of extreme distention, percussion was tympanitic over its entire surface, and the patient was troubled with colic pains and borborygmi. The stools were small in amount, light colored, and soft, and their evacuation was attended by the expulsion of a large quantity of flatus. On December 9th there was some loss of power in the left arm and leg, and upon the following day the left side of the face and both limbs became paralyzed. Subsequently the left arm and leg became œdematous, the fluid re-accumulated in the right pleural sac, and a large bed-sore developed over the sacrum. In this condition she remained until December 19th, when death took place.

The *post-mortem* examination was made six hours after death. The left arm and leg were very œdematous, and together with the distended abdomen presented a marked contrast to the shrunken face and emaciated thorax and right arm and leg. On removing the skull-cap a moderately firm clot was found in the right middle cerebral artery, extending from its point of junction with the anterior cerebral artery to its first bifurcation. The vessel itself was larger and had a thicker and firmer wall than that of the opposite side. The under surface of the right anterior and middle lobes of the cerebrum, in the neighborhood of the Sylvian fissure, was softened, the degeneration involving an area of the brain-substance about one inch and a half in diameter and one-fourth of an inch in depth. There was a

large collection of serous fluid in the right pleural cavity; the costal pleura was thickened, and the diaphragmatic thickened and rough; several small white nodules were observed upon the pulmonary pleura, and between it and the parietal layer there were two strong cord-like bands of adhesion, one at the top, the other at the bottom, of the chest; the lung was considerably compressed, but when removed was easily inflated. There were no lesions of the left lung or pleura. The heart was flabby and small, though there appeared to be some hypertrophy of the wall of the left ventricle; the edges of the leaflets of the mitral valve were thickened, and there were evidences of atheroma at the base of the aorta, especially about the orifices of the coronary arteries.

The whole parietal layer of the peritoneum was thickened, and its diaphragmatic surface felt rough to the finger, being completely covered with small white, flattened nodules; the visceral layer presented numerous points of cloudiness, and was studded with firm round nodules, varying in size from a pin's head to a pea, and, though more prominent, having the same gross appearances as those situated upon the under surface of the diaphragm. The great omentum was displaced, being puckered up between the stomach and transverse colon. The walls of the stomach were not diseased, but the organ itself was drawn downward and toward the left by adhesions, which also involved the pancreas and left extremity of the transverse colon, which was twisted upon its axis about one-half a rotation. The small intestine was dilated, the dilatation being most marked in the ileum, where there was a collection of soft yellow material. The ascending and transverse colon, up to the position of the rotation, were very greatly dilated, and contained a quantity of soft fecal matter; the calibre of the twisted portion of the intestine was much reduced, and the passage through it was tortuous, though a large-sized sound could be inserted without much difficulty; the descending colon and sigmoid flexure were collapsed and empty, and the lower end of the latter was adherent to the superior surface of the uterus and bladder; here, too, the intestine was partially rotated and twisted upon itself, but the passage-way was less narrow than above; a loop of the ileum was also adherent at this position; its calibre, however, was not changed. The mucous membrane of the small intestine and of the distended portion of the large intestine was congested, while that of the collapsed intestine was thickened and covered with mucus. The pancreas was firmer than normal, and apparently cancerous. There was a peculiar transverse fissure extending across the right lobe of the liver; in other respects the organ was healthy. The spleen and kidneys were small. Both ovaries were of normal size, and

were enclosed in the adhesions which bound the sigmoid flexure to the fundus of the uterus. The uterus was larger and harder than usual, and was involved in a cancerous mass, which extended between it and the rectum, partly surrounding without constricting the latter tube. The vagina was divided into two equal canals by a vertical partition, which extended, with a short interval at the upper third, from the vulvar orifice to the uterus. This partition divided the neck of the uterus into two symmetrical portions, each of which presented, in miniature, the appearances of the normal cervix, and had, a little within the centre, a transverse os; through each of these a probe could be passed into what seemed to be a separate uterine cavity. On section this was found to be the case, the cavities being spindle-shaped, each one communicating at its upper end with the corresponding Fallopian tube, and the left being somewhat larger than the right. The bladder was healthy.

Dr. J. H. C. Simes, Pathologist to the Episcopal Hospital, made an examination of the mass involving the uterus, also of the pancreas, and of several of the nodules situated upon the peritoneum, and reported as follows:

"A microscopical examination of the new formation which has developed between the uterus and rectum shows it to be composed of a fibrous tissue, so arranged as to form oval alveoli, which alveoli are filled with epithelioid cells.

"The blood-vessels are seen running in the fibrous stroma. It may be classed as a carcinoma, variety 'scirrhus.'

"An examination of the pancreas proved it to be the seat of a similar formation.

"The nodules scattered over the peritoneum were also examined, and found to be formed of a tissue corresponding to the described new formation." *December 28th*, 1876.

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6. *Knot of intestinal worms.*

By Dr. H. Lenox Hodge, for Dr. Lloyd, resident physician of the Presbyterian Hospital.

A specimen of the knotting of intestinal worms together, so as to constitute a ball about one and a half inches long by about three-quarters of an inch wide. The variety of worm was the *Ascaris lumbricoides*. There were projecting from the mass six ends, thus indicating that three worms were thus tightly knotted together. *December 28th*, 1876.

7. *Scirrhous cancer of the stomach.*

By Dr. J. M. Barton.

The specimen here presented was sent to me from the interior of the State, with a request to obtain the opinion of some of the profession here as to its pathological character.

The notes of the case are by no means full.

The patient, a man, probably over 50 years of age, had not been healthy for several years, complaining of no pain, but merely a distressed feeling in the stomach when exhausted. It was not until two months before death that he suffered from vomiting, which was quite persistent, occurring after every meal.

About the middle of last month considerable quantities of dark-greenish, unhealthy-looking pus, accompanied by a fluid having somewhat the appearance of coffee-grounds, were vomited, the latter fluid frequently reappearing during his illness. *January 25th*, 1877.

Report of the Committee on Morbid Growths:

"A microscopic examination of the stomach presented by Dr. Barton shows, by a transverse section of its wall, the mucous and submucous membranes to be infiltrated with tube-like collections of epithelioid cells, which upon transverse section show the cells arranged in a somewhat concentric manner, having no central lumen. Between the tubuli is seen a fibrous-tissue stroma. The morbid growth may be classed as a *scirrhus ventriculi*." *February 8th*, 1877.

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8. *Carcinoma of stomach, causing constriction four inches above the pylorus, with corresponding constriction of transverse colon; scattered secondary growths in liver, omentum, and mesentery.*

By Dr. J. C. Wilson.

The specimens exhibited were taken from the body of P. F., a blacksmith, born in Ireland, who died at the age of 62, in the Philadelphia Hospital, February 10th, 1877. He was admitted to the ward five days before his death, but had previously, at long intervals, come under my observation at the out-patients' department of the Jefferson College. The following notes are condensed from the ward-record of the case:

Until seven years ago was a stout, healthy, hard-working man. At that date he began to be dyspeptic, and soon became so bad that he failed greatly in strength, and was obliged to give up work.

At first the symptoms were those of difficult digestion, with a sense of distress some time after taking food, occasionally vomiting, and constipation. Pain in the epigastric region soon began to trouble him. These symptoms grew gradually worse; he lost flesh, his skin became sallow, but remained free from actual jaundice during his attendance at the College as an out-patient, which continued until about a year before death. Liver-dulness was about normal, and no epigastric tumor could be felt. During the past year he was several times admitted to the Philadelphia Hospital, making short stays in the wards.

At the final admission he was very ill. Skin and conjunctivæ were of a deep orange-yellow hue. Emaciation was extreme. His belly was considerably distended; it was symmetrical in outline, and on examination this swelling was found to be chiefly due to fluid in the peritoneal cavity. There was also a good deal of tympany. On the most careful palpation in various attitudes, no distinct tumor could be felt, nothing more definite than an obscure sense of resistance to the right of the median line in the epigastrium. The liver-dulness in the mammary line began at the fifth rib, and reached a distance of three and a half inches. No tenderness in the hepatic region. The superficial veins of the abdomen were slightly enlarged, and filled from below. There was faint pitting of the tissues around the ankles on pressure. Pulse 100. No cardiac disease. Chest clear on percussion; no evidence of any intra-thoracic malady.

The tongue was coated with a pasty fur. There was no desire for food; liquid diet was vomited a short time after it was taken; no solid food was given whilst he was under observation. On one occasion a small quantity of blood was vomited. His bowels were once moved whilst he was in the ward; the character of the stool was not observed. He stated that constipation had been stubborn for a long time, and that the stools were light in color.

Pain was constant, often intense; it was referred to the gastric region, where also there was great tenderness on pressure.

Diagnosis.—Malignant disease of the stomach, with implication of the liver.

Post-mortem examination.—Brain not examined.

Nothing bearing on the case was discovered in the thoracic viscera, which, save a few points of aortic atheroma, were normal.

The abdomen contained several pints of fluid. Everything was stained deep-yellow.

The stomach was encircled by a mass of new tissue which was extremely dense and hard, bloodless, creaking under the knife, presenting in fact all the naked-eye appearances of scirrhus. This tumor implicated the wall of the viscus in the form of a ring, the thinnest part being on the posterior wall, the greatest mass in front and below where it crossed over to involve the transverse colon in its grasp, causing a similar but more marked stricture of that portion of the gut lying opposite the constriction of the stomach. This narrowing of the stomach was four inches above the pylorus, and its lumen was about equal to that of the pyloric outlet. In the neighborhood of the mass the gastric mucous membrane was softened but not ulcerated. The bulk of the tumor at this point was that of a small orange.

The transverse colon above the region of the constriction was greatly distended with flatus, and contained a small amount of fecal matter.

On the under surface of the liver, at the porta, was a smaller cancerous mass of the same appearance, and several similar tumors of small size were found in the interior of the organ. The liver weighed three pounds six ounces. Several nodules the size of chestnuts were in the great omentum and at various points in the mesentery, reaching down towards the small intestine, but not constricting it. No new growth of the cancerous kind was found in any other organ.

Dr. E. O. Shakespeare, to whom these morbid growths were referred for a microscopic examination, said that sections were made from the hard, fibrous-like mass which bound the transverse colon to the greater curvature of the stomach, from a portion of the duodenum involved in a similar growth, from some small nodules found in the mesentery near the latter location, from the dense fibrous-like growth surrounding and obstructing the portal and biliary vessels and the hepatic artery at their entrance into the liver, and from some of the small white and consistent nodules which studded the parenchyma of the liver.

The sections were all stained with carmine, and examined in glycerin with a Hartnack No. 8 dry.

Those cut from the morbid point of the duodenum exhibited the usual structure of scirrhous cancer. The growth was confined mainly to the submucous tissue and to the muscular coat; it extended, however, for some distance into the mesentery at its point of attachment to the lesser curve of the intestine. Numbers of epithelioid cells, with granular contents and large round nuclei, and often large nucleoli, were to be observed filling oval or

somewhat lozenge-shaped alveoli, which were formed by the interlacing and frequent union of thick bands of fibrous trabeculæ. Within these trabeculæ, mainly over the position of the nodal points, small masses of flattened and proliferating cells were to be easily seen. The nuclei of the trabeculæ were all in a state of irritation. Within a few of the larger trabeculæ small blood-vessels could be seen. The cells of the mucous follicles adjacent to this morbid growth were in a state of irritation, but the glands had not encroached upon the submucous tissue, nor had they ulcerated. The sections from all the masses other than those present in the parenchyma of the liver offered similar pictures. It may, however, be stated that the cancerous growths around the vessels entering the liver appeared to start from the adventitious coat of those vessels, and to extend into the substance of this organ only along their course. The adventitious coat of the hepatic artery seemed to be the point of greatest activity. The muscular wall did not appear to be particularly touched; but the lumen of the vessel was somewhat narrowed by a growth of the endothelium. Indeed, this irritation of the endothelium was not limited to that portion of the artery which corresponded to the surrounding scirrhous mass at the entrance of the vessels, but it could be distinctly observed in sections of the liver itself, extending even to the finest ramifications of the artery.

Now we come upon the nodules which studded the parenchyma of the organ. The smallest of these were found to occupy positions with respect to the lobules corresponding to the position of the fine branches of the hepatic artery and portal vein and bile-ducts. It was still the tissue around the arterioles of the hepatic artery, and around the vessels and nerves running with it, from which the morbid growth in the parenchyma sprang. When acini were destroyed the destruction began in portions bounded by the arterioles, and progressed radiating from that centre. Now, with respect to the character of these nodules. Where the arterioles were not utterly destroyed, a narrow cylinder of the tissue surrounding the vessel presented the alveolar structure and cell-heaps of cancer, and the proportion of the size of the fibrous trabeculæ to that of the enclosed cell-masses showed some predominance of that of the former over the latter. Hence I would decide that this wall area partakes more of the scirrhus. But outside of this small zone of scirrhus, which was not to be seen at all if the arteriole had undergone destruction, the alveoli quickly became round. The cells filling them were irregular in shape from pressure, were often polynucleated, and caudate. The fibrous trabeculæ limiting the alveoli were thin and nucleated, and bore only a very small proportion to the diameter of the alveoli. This zone should probably be designated as

medullary carcinoma. Beyond it the cells and their relative arrangement gradually passed into the normal condition of the healthy glandular structure. Speaking in a general way, then, of the nodules which studded the liver, they were determined to possess the character of medullary cancer.

It should be stated that a portion of the hard mass in the walls of the stomach, including the mucous membrane, was also hardened for section, but could not afterwards be found.

Dr. Hodge said the time of the vomiting after eating was interesting in connection with the seat of the tumor. He had now a case under observation in which he could easily pass a bougie as far as the cardiac extremity of the stomach, but it does not enter the stomach. The patient vomits within a few minutes after taking food, and it was a question whether the obstruction is at the pylorus, the cardia, or between these points.

Dr. C. B. Nancrede said it was an interesting fact in this specimen that where connective tissue is normally present in large amount, as in the stomach and mesentery, the secondary morbid growths are scirrhous; whereas in the liver, where the connective tissue is very sparse, we have encephaloid. Where the breast is removed for primary cancer, the secondary growth is usually much softer. This, Dr. Nancrede thought, is explained by the enormous quantity of connective tissue in the gland primarily, which is removed with it, leaving nothing but the subcutaneous connective tissue. There would therefore seem to be an anatomical reason for the secondary growths being softer than the primary. Where a small amount of connective tissue is present, the tendency is to medullary formations; where, on the other hand, this element is large, we have the scirrhous growths, or, at least, the harder forms of encephaloid.

February 22d, 1877.

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9. *Carcinoma of stomach, pancreas, mesentery, etc.*

By Dr. W. H. Parish.

J. M., a German, æt. 64 years, and a ragpicker by occupation, was admitted to the St. Mary's Hospital, February 13th, 1877. His mother died of a tumor of the neck; his father of some lung-affection, probably phthisis.

His own health had been fair until July, 1876. Since then there has been a gradual loss of appetite and an increasing emaciation. Constipation, pyrosis, and vomiting were among the earlier symptoms, and became

more and more aggravated. At the time of admission to the hospital the emaciation had become extreme, and there was a decided cachectic appearance. There was vomiting of everything taken into the stomach, and constipation of twelve days' duration. There was some œdema of the lower extremities; at times pain in the epigastric region, but at no time severe. In the region of the stomach and extending below it, and also in the region of the left lobe of the liver, was a decided tumor, firm and resisting in character, but somewhat movable. There were a number of small masses, easily distinguished on palpation, and seemingly very superficial. The tumor was slightly painful when manipulated. There were no ascites. The superficial abdominal veins were decidedly enlarged.

After removal of the constipation and restriction to liquid diet, the vomiting became only occasional, the water-brash remaining persistent. Owing to the extreme emaciation and the marked symptoms, although there was never vomiting of blood, the diagnosis seemed easy, and was that of carcinoma of the stomach, especially the pyloric portion, and a similar involvement of the mesentery and most probably of the pancreas and left hepatic lobe. Death occurred on the 28th of February, of asthenia.

The *autopsy* was made by the resident physician, Dr. Garrett.

In the pericardium was about an ounce of serous fluid. The heart-valves were normal. In the right ventricle, and extending to the bifurcation of the pulmonary artery, was a firm white clot. Old adhesions in both pleuræ. Hypostatic congestion of lungs. In the upper lobe of the left lung was a small hard nodule. In the left lobe of the liver there were several fine nodules. The rest of the liver seemed normal in appearance. The spleen and right kidney were normal. The left kidney gave evidence of cystic degeneration. There was no albumen in the urine. The tumor on removal was found to consist of the stomach, pancreas, portion of the omentum, and mesentery. The mesenteric glands were greatly enlarged and dense in character. The pylorus was decidedly encroached upon by the indurated growth. The growth seemed not to involve any of the stomach but the immediate neighborhood of the pylorus. There was no appearance of ulceration of the mucous surface of the stomach. The abdominal aorta and the inferior vena cava were embraced by the cancerous omentum.

A microscopical examination was made by Dr. S. H. Griffiths, whose report is subjoined.

"I present herewith a brief description of the microscopical appearances of the specimens of stomach, pancreas, and mesenteric gland submitted by you.

"*Stomach.*—A section presented an alveolar structure; the alveoli filled with round and distorted cells. The meshes were in some parts large, much broader than the bands of intervening fibrous tissue. Other portions were made up in greater part of the dense fibrous stroma; these would be found in close proximity to the former, and contained small nests of shrivelled or granular cells. The cells varied in size from $\frac{1}{3000}$ to $\frac{1}{800}$ of an inch in diameter, and contained vesicular nuclei and distinct nucleoli.

"Sections of the *pancreas* showed a marked increase of the interlobular connective tissue, which was intermixed with spindle-shaped cells. No nests of large cells were found.

"The *mesenteric gland* was made up of delicate trabeculæ, the large meshes of which were filled with cells, some with lymph-corpuscles, but mostly with large cells; everything densely packed.

"*Conclusions.*—Stomach, scirrhus; mesenteric gland, soft carcinoma; pancreas, not determined." *March 8th*, 1877.

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10. *Pancreatic induration resembling scirrhus; involvement of mesentery, supra-renal capsules, and tissue surrounding kidneys; similar growth upon heart.*

By Dr. De F. Willard.

A. B., widow, æt. 69. Case only seen at time of autopsy. About eighteen months since, commenced to suffer with pain in epigastric region, accompanied by various dyspeptic symptoms, such as occasional vomiting, nausea, constipation, loss of appetite, etc. She was under the care of various practitioners, so that her history is not very complete, but the course of the symptoms appears to have been variable,—the pain at times being severe in character, shooting throughout the whole upper portion of abdomen, while at other seasons the discomfort only amounted to a general soreness and aching. The digestive powers gradually failed, jaundice occurred for several weeks, emaciation progressed, and the patient died from exhaustion.

About two weeks previous to her death a dense mass occupying the lower epigastric region was discovered. Her urine is said to have contained no albumen.

The case presented no evidences or marks of constitutional syphilis; although the character of her husband would not render such a contamination impossible.

Autopsy, forty-eight hours after death.—Considerable amount of fat

still remaining in abdominal walls. No effusion or other signs of general peritonitis. Stomach, spleen, and liver normal. Pancreas enlarged to about twice its normal size, extremely hard, firmly fastened to duodenum, and also at one or two points to ileum. Backwards and downwards the dense induration extended in a solid mass, binding the organ firmly to the mesentery, and from thence the hardening continued backwards to a large mass occupying the posterior portion of the abdomen, which afterwards proved to be the entire surrounding connective and fatty tissue enveloping both kidneys. This tumor throughout its entire extent was of extreme density, and was capable of being moved slightly as a solid whole. Upon further dissection, the mesentery was found to be greatly thickened, the induration not being confined to the glands, but involving the whole connective tissue. Both supra-renal capsules were implicated in the growth, being enlarged and hardened. The right kidney was larger than usual, but was of good color, and bore the normal relation of medullary to cortical portion. The surrounding tissues were greatly thickened and compacted by the growth, but upon the left side this condition was more evident. The induration here was very marked, and it was only by tearing the structure of the kidney that separation could be effected between the capsule and the surrounding mass. On the left side nearly all traces of normal renal structure had disappeared, their place being occupied by depots of pus and softening tissue. With such extensive inflammatory changes, no peritonitis had apparently been awakened.

Upon section, the pancreas cut with the hardness of a scirrhous mass, and presented the ordinary appearance of that disease, save that at certain points there were small white deposits. But little normal pancreatic structure remained, the induration occupying the entire organ. A section of the mesentery presented the same appearances.

Lying in the right auriculo-ventricular groove was a nodule, of the size of an almond-shell, dense and firm, which, upon being laid open, presented to view the same characteristics noticed in the other organs. The atheromatous coronary artery ran directly through this growth.

March 22d, 1877.

Report of the Committee on Morbid Growths:

"A microscopical examination of the specimen presented by Dr. Willard, which was situated in the interventricular groove of the heart, surrounding one of the coronary arteries, shows it to consist of an infiltration of granulation-cells, which in places have been converted into spindle-shaped cells; also fasciculi of fibrillated connective tissue are seen. The structure would indicate the growth to be the result of a simple inflammatory pro-

cess. An examination of the pancreas and mesentery from the same case demonstrated a similar structure." *April 12th*, 1877.

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11. *Gastro-duodenal cancer.*

By Dr. A. S. Reynolds.

W. C., male, æt. 59, was admitted to the Presbyterian Hospital, February 2d, 1877, giving the following history. Six weeks previous he began to have acid eructations and regurgitation about fifteen or twenty minutes after each meal, accompanied by considerable flatulence. There was a constant dull pain in the right epigastro-hypochondriac region, which was intensely exaggerated about half an hour after eating. Said he was constantly hungry; had a bad taste in his mouth, and generally awoke with feelings of nausea in the morning; action of bowels had been irregular; lately had slight attacks of vertigo, and during the preceding week had vomited during the nights.

He had been of intemperate habits, but previous to the present attack had enjoyed good health. Family history cancerous. Personal appearance indicated lymphatic temperament. He was moderately emaciated, skin pale, with slight yellowish tinge, cachectic, harsh, dry, and scaly; temperature normal; pulse 120; arterial tension high.

The belly was scaphoid, the walls tense and rigid, rendering it impossible to determine the size or relation of viscera by palpation. By percussion the area of hepatic dulness was found to be irregularly increased anteriorly, reaching within an inch of the umbilicus; the stomach was found greatly distended, but the spleen could not be detected at all. Heart-impulse sthenic; radial arteries tense and rigid.

From the time of admission all the symptoms were progressively exaggerated; pain became acute and lancinating, and emaciation became extreme. He became very constipated, the dejections were almost colorless; vomiting seemed to depend on distention of the stomach. He would often pass three or four days and then vomit several pints at a time.

Four weeks before death the abdominal walls had so relaxed that a tumor was quite perceptible to sight and palpation, lying in the umbilical region, to the right side, seemingly connected with the liver.

There was pulsation in the tumor, synchronous with the radial pulse, and a murmur was evident in the iliac arteries and in the abdominal aorta. Distinctly coincident with inspiration and expiration, a markedly dry

fremitus was imparted through the tumor, which stopped with cessation of respiration.

During the two weeks before death, the skin became soft and moist; vomiting less frequent; the bowels loose and regular, though the dejections were still colorless; the arterial tension was lessened; the skin became more jaundiced; the abdominal veins were enlarged, and purpuric spots appeared on the extremities. He died of asthenia from inanition, May 8th, 1877.

Autopsy, fifteen hours after death.—Emaciation extreme; abdomen scaphoid, showing abnormal enlargement in the right hypochondriac region.

The gastric and mesenteric veins were congested; the omentum was darkened, and along its right anterior border was studded with small glandular masses of the new growth; the stomach was greatly enlarged, the walls of the cardiac extremity being greatly attenuated, while the pyloric end was thickened and infiltrated with the abnormal growth; the pylorus was patulous. The liver was cirrhotic, and contained several small cancerous nodules; otherwise the liver was not implicated in the disease nor connected with the tumor. The gall-bladder was greatly enlarged, and contained about five ounces of bile.

Occupying the upper part of umbilical region was an irregular mass, four or five inches in diameter, yellowish in color, hard, and firmly attached to the posterior abdominal walls. The growth seems to have originated in the posterior duodenal walls, about the orifice of the ductus communis choledochus, which duct was entirely surrounded by the growth, and at one point it sent a valve-like projection into the duct, which almost entirely occluded it. The biliary and hepatic ducts, though not involved in the disease, were enlarged. The contiguous mesenteric glands were enlarged and indurated, and the root of the mesentery was involved in the growth in its upper part, impinging on the aorta and cava, over the third, fourth, and fifth lumbar vertebræ, greatly diminishing their calibre.

The spleen was pale, soft, flabby, and abnormally small, being about two inches long and one inch thick. The kidneys were normal. The heart was of average size; valves normal; the walls of the left ventricle were hypertrophied, those of the right side were thinned. The arch of the aorta was dilated, and its walls were filled with calcareous plates.

Dr. James Tyson was prompted by the extreme dilatation of the stomach presented to allude to Kussmaul's method of treating such dilatation already brought forward at a former meeting by Dr. James H. Hutchinson as of great service in the treatment of a case of cancer with dilatation of the stomach, the specimens from which were exhibited by Dr. H.

Dr. Tyson was at this time making use of the treatment in a case of long-standing dilatation of the stomach, apparently without organic disease, in which there was the usual accumulation of immense quantities of acid fluid. The discomfort from this accumulation was so great as to cause the patient to seek relief by daily inducing vomiting by placing his finger in the fauces for the purpose. Dr. Tyson was using the Thudichum-douche apparatus for the purpose. The patient introduced the tube, by an act of swallowing, to the extent of about twenty inches, when the bottle, half filled with tepid water, is elevated, and the water allowed to run into the stomach; as soon as about one-half of the water has run in, the bottle is lowered and the fluid immediately returns, until the stomach is entirely emptied. Then the bottle, which contains a quart, is filled with tepid water, a teaspoonful of bicarbonate of sodium dissolved in it, and the water again allowed to flow into the stomach. Just before the bottle is empty it is reversed, and the fluid is again returned to the bottle, the stomach being thus thoroughly washed out. All this is done without withdrawing the tube, unless, as sometimes happens, it becomes obstructed by food. The most marked relief followed the first washing out. The patient immediately ate a hearty meal, and enjoyed it as he had not enjoyed food for a long time. Indeed, he so enjoyed his meals that he soon found he was eating too much, and was compelled to restrict himself. The washing was repeated the next day, but it was soon found that it was often enough to use it on alternate days. He soon learned to use it himself with great dexterity, and now washes his stomach out every other day, at which intervals he finds himself growing uncomfortable from accumulation of fluid.

With regard to the curative effect in cases where there is no obstruction, Dr. T. was, as yet, unable to express any opinion from his own case. For, although the use of the treatment gives the most decided relief, yet when the patient omits its use the symptoms return.

The specimen was referred to the *Committee on Morbid Growths.*

May 10*th*, 1877.

Report of the Committee on Morbid Growths:

"The specimen presented by Dr. Reynolds, and referred to committee, from a microscopic examination proves to be a carcinomatous new formation, its structure being made up of epithelial cells arranged in alveolar spaces, which spaces become very evident upon pencilling a thin section; also the walls of the alveoli are seen to consist of fibrillar connective tissue. Having such an arrangement of elements, it may be classed as the scirrhous variety.

"One of the nodules developed upon the mesentery was examined and found to be of a similar nature." *May 24th*, 1877.

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12. *Membranous enteritis; intestinal casts.*

By Dr. De F. Willard.

The intestinal casts presented are from a case of *membranous enteritis*, in the person of a previously healthy female, æt. 40, who some six months before had been poisoned by excessive doses of podophyllin. The extreme purging was followed by an aggravated form of dyspepsia, with alternating constipation and diarrhœa, until about four months afterwards, when large shreds of membrane began to be passed at each stool, their voidance being preceded by tenesmus and torturing pain. This pain was of the most excruciating character, resembling severe colic, and was never absent except after a free escape of the membrane after large and repeated injections. The pain extended over the whole abdomen, and the tenderness of this region was such that every touch gave pain. Succeeding the stools the exhaustion was so great as to prostrate the patient for hours.

There was no fever, but loss of appetite, emaciation, and exhaustion were progressive as the dyspeptic symptoms increased. The fæces were ill formed, but scybala were frequent.

The membrane as passed was usually in long, partially-rolled shreds, presenting to superficial view the appearance of sections of a tapeworm. The color of the masses was a dirty yellow, and when floated in water they were seen to be of irregular shape, from laceration, and to consist of flakes of a thin, transparent, albuminoid substance, possessing considerable tenacity. After soaking in water they became whiter, and they were rendered dark and tough after lying a few days in Müller's bichromate of potash fluid.

At a later period they were seen at the bottom of the vessel in large whitish masses resembling pus and mucus, but when floated were found to be casts, apparently of small intestine, eight to ten inches in length. Their amount varied from two to four ounces per day.

The rectum was found ulcerated at several points, and there were internal hemorrhoids, both of which difficulties were benefited by appropriate local treatment.

The distressing pain was relieved by opium and stramonium suppositories; but, thus far, opium, nitrate of silver, bismuth, turpentine, sulphuric

acid, poultices to abdomen, and two-quart injections of a half-grain solution of nitrate of silver, have done but little to check the casting off of this membrane. *June 28th*, 1877.

Report of the Committee on Morbid Growths:

"The specimen presented by Dr. Willard and referred to the Committee on Morbid Growths, by microscopical examination, is seen to consist of epithelial cells, which are considerably swollen and finely granular. The nuclei of the cells are somewhat indistinct, due to the granular condition of their protoplasm. A few lymphoid corpuscles are to be seen.

"The committee would consider the specimen to be the product from a case of 'intestinal desquamative catarrh.'" *September 13th*, 1877.

III.—THE VASCULAR SYSTEM.

1. *Dissecting aneurism of the abdominal aorta.*

By Dr. W. H. Edwards, for Dr. Edward R. Stone.

C. W. K., æt. 46 years; German. He had been for many years a bar-tender, but when my acquaintance with him began he was engaged as a collector for a clothing-store in the city. He had been in the habit of drinking moderately of wine and beer, but rarely sufficient to intoxicate him. He had never had syphilis, and his previous health had been excellent. I saw him for the first time in May, 1875, when he told me that he had been suffering for some weeks (he did not remember how many) with pain in the left hypochondriac region. The character of the pain was usually dull, but sometimes it became sharp and stinging. There was also at times pain in the back at the lower dorsal vertebræ. His appetite was rather variable, with occasional dyspeptic symptoms, but no vomiting or pain in the region of the stomach. Bowels regular.

Examination showed a very tall and quite muscular man, rather slender, but apparently in fair condition. Lungs healthy; heart-sounds natural, excepting that they were somewhat indistinct; splenic dulness normal; liver not enlarged.

After visiting him twice he passed out of my hands until the following November, when he told me that he had not had any relief from the pain, which had grown so severe that he was no longer able to attend to his business, as the walking aggravated the pain in his side, and the jar of riding in a carriage or car was even worse. He had become much thinner and ill-looking, and his appetite and digestion were somewhat impaired. The pain still occupied about the same situation, but had spread itself out to occupy nearly the whole space between the nipple and the lower border of the ribs, sometimes being felt in the epigastric region. Repeated examinations by myself and others failed to find evidence of a tumor or other organic disease in any of the organs; the urine was several times examined for albumen, with negative results. Dr. S. H. Griffith made a microscopical examination of the blood, to determine the relative quantity of corpuscles. The red were moderately diminished in number, but without any real

increase of white cells. It would be tedious to go into the details of the case during the several months he was under my care. It will be sufficient to say that he steadily lost ground, becoming gradually weaker and more emaciated. The pain became more continuous and severe, requiring the constant use of the hypodermic syringe.

Early in the summer of 1876 he gained admittance into one of our hospitals, and only returned home two weeks before his death. During his stay in the hospital he had rapidly failed. Emaciation was extreme, with commencing bed-sores on trochanter and sacrum. A large tumor was now very evident, extending from the epigastrium to the umbilicus, the dulness of which was continuous with that of the liver and the spleen. He had occasional vomiting, and his stomach had great difficulty in digesting even the simplest diet. On palpation the tumor seemed in part solid; at other points fluctuating. On ausculting over the mass a splashing sound was heard, synchronous with the pulsation of the aorta. He died quietly on October 20th.

Post-mortem examination, thirty hours after death.—Chest and abdomen only examined. Pleuræ, a few old adhesions on both sides; slight effusion of clear serum in the left cavity. Lungs healthy. Pericardium normal. Heart rather small; ventricles contracted, but otherwise healthy. On opening the abdomen a large tumor was seen, corresponding with the swelling noticed during life. The stomach was much enlarged, and was stretched over the mass which had grown up behind it. Its walls appeared healthy. Mucous membrane softened by post-mortem decomposition.

The pancreas was spread out on the upper surface of the tumor, and at first sight appeared enlarged, but on closer examination was found to have been merely flattened out by pressure. Its tissue was healthy.

The liver was in contact with the right side of the mass, but had no connection with it. It showed two or three wedge-shaped spots on its surface, looking like infarctions. The cells appeared healthy, but the whole organ was congested.

The spleen was also in contact with the growth, but was not involved. It was healthy, excepting slight congestion.

The transverse colon was attached by the fold of peritoneum to the lower part of the tumor, and was put on the stretch by the large size of the latter.

The kidneys were congested, but did not appear otherwise unhealthy.

The tumor itself well filled the upper part of the belly. It was covered with peritoneum, which had apparently been pushed forward from the back part of the abdominal cavity. It was directly upon the great vessels of

the abdomen. The tumor was felt to contain cysts, and two of these, very near the surface, were ruptured in removal, one containing clotted blood, the other a fluid having the appearance of pus. It was reserved entire for examination, and with it a fragment of liver and a kidney.

Dr. C. B. Nancrede asked what method had been used to determine the fact stated, that the number of red blood-corpuscles was diminished.

Dr. E. R. Stone said the corpuscles were counted by Dr. Griffiths according to the method recently recommended by Dr. E. L. Keyes in the *American Journal of the Medical Sciences* for January, 1876, slightly modified by Dr. Griffiths, and thus described by him:

"'The diluting fluid was that used by Dr. Keyes—urine; to each ounce of which was added gr. v of corrosive sublimate, and the mixture then reduced to a specific gravity of 1020. The dilution of the blood was 1 to 250. Not being at that time the possessor of Hayem & Nachet's hæmatimeter, I had Mr. Zentmayer make for me a cell .01 inch deep. Taking .01 inch square of the field, I had a cube of the diluted blood .01 inch in each direction. I observed the precaution not to allow the fluid to reach the edge of the cell, securing the cover and preventing evaporation by introducing under the cover some water.

"'Using this, I made a number of counts; the average being in my own case 426 red globules; in the case of Dr. S. 425. In the case of the patient the average of six counts was 313. These numbers were not large enough to determine anything about the white corpuscles, except that they were not markedly increased relatively to the red.

"'Therefore I considered the case was one of marked reduction of the number of red globules, and probably also of the white in the same proportion.

"'I should add that my dilution may not have been accurately 1 to 250, but what it was for one count it was for all, so that the comparison remained good.'" *October 26th*, 1876.

The specimen was referred to the *Committee on Morbid Growths*, which reported, November 9th, 1876, as follows:

Report of the Committee on Morbid Growths:

"The abdominal tumor is found to be a dissecting aneurism filled with firmly-organized blood-clots. The portion of the abdominal aorta remaining attached to specimen is highly atheromatous, and apparently eroded at one or more points."

2. *Left lung and heart, with fenestrated pulmonary leaflets, and peculiar growth on one of the tricuspid leaflets, from a case of phthisis.*

By Dr. Louis Starr.

J. R., æt. 31, a sailor, was admitted to the medical ward of the Episcopal Hospital on July 6th, 1876. He had never been intemperate in his habits, but when a very young man had contracted venereal disease, and at intervals afterwards had suffered from constitutional syphilis, manifested chiefly by falling out of the hair, eruptions on the skin, and sore throat. In other respects his health was good up to the spring of 1874, when he began to be troubled with a dry, hacking cough, had several slight attacks of hæmoptysis, and lost appetite, flesh, and strength. From this time, though there was a short period of improvement during the summer of 1875, his condition slowly grew worse, and he was obliged to give up work about one month before coming into the hospital. When admitted, he was considerably wasted in flesh, and quite weak; his appetite was poor, there was some tendency to diarrhœa, and well-marked hectic fever and colliquative sweating. He complained also of dyspnœa on exertion, and of pain in the left chest, the latter located for the most part in the mammary region, but at times extending from this position around the chest towards the angle of the scapula. His cough was frequent and annoying, and was attended with a copious expectoration, the sputa being nummular, muco-purulent, and occasionally streaked with blood. An exploration of the chest revealed the physical signs of a large cavity in the upper lobe of the left lung, while over the lower lobe numerous moist crackling râles were heard. The right lung appeared to be healthy, with the exception of the portion corresponding to the infra-clavicular and upper part of the mammary regions, where there was dulness on percussion, together with harsh respiration and moist, crackling râles. The first sound of the heart was somewhat feeble, but no murmur could be detected. The urine was voided freely, and was normal in composition. After the patient's admission, the pulmonary lesion progressed uninterruptedly, and death occurred, without the appearance of any unusual symptom, on October 29th.

The *post-mortem* examination was made twenty-four hours after death. On opening the thorax the left lung was found to be firmly bound to the chest-walls by old pleuritic adhesions, and was removed with great difficulty. The whole of the superior two-thirds of its upper lobe was converted into a large cavity, lined with a smooth membrane, and having

extremely attenuated walls composed of a thin layer of condensed lung-tissue and the thickened pleura, and being in places, as over the anterior surface, scarcely two lines in thickness. In the lower third there were two cavities, each about the size of a walnut, having irregular walls, and being surrounded by indurated pulmonary tissue. All of these cavities were partly filled with a purulent fluid. The lower lobe was indurated, contained numerous small cavities, isolated deposits of cheesy matter, and collections of miliary tubercles, and the bronchial tubes traversing it were dilated. At the apex of the right lung there was a moderately large anfractuous cavity, and throughout the remainder of the lung a number of the small masses of caseous material in various stages of degeneration. The heart was small and slightly flabby; there was no alteration in the relative size of its chambers, and the aortic and mitral valves were perfectly normal. The posterior and right leaflets of the pulmonary valve, however, were fenestrated; and attached to the auricular surface of the anterior leaflet of the tricuspid valve, at a short distance from its free margin, was a round, moderately firm, reddish-brown body, about the size of a pellet of No. 4 shot. The liver was enlarged and fatty. The kidneys were healthy. *November 6th*, 1876.

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3. *Specimens from two cases of combined heart and kidney disease.*

By Dr. Louis Starr.

Case I.—Lizzie C., æt. 24, single, a "book-sewer" by occupation, was admitted to the Episcopal Hospital on November 11th, 1876. She had a bad family record, her mother having died of cardiac disease, and her father from some chronic illness, the nature of which could not be ascertained. Her own health had been moderately good, dating from an attack of scarlet fever, unaccompanied by dropsy, which occurred during her childhood, up to 1872, when she began to notice that her work was becoming more irksome, and that she was more readily fatigued. There was no further indication of ill health, however, until 1873, when micturition became so frequent as to attract her attention, and there was some puffiness of the eyelids and slight œdema of the feet and ankles. The latter symptoms disappeared under treatment, and she was able to keep at her trade, though interrupted by several short attacks of subacute rheumatism, until the summer of 1875. At this date the œdema reappeared, the general debility increased so that she was obliged to give up work, and she commenced to suffer from palpitation of the heart and dyspnœa on

exertion, together with impaired digestion and frequent vomiting. Several months before coming into the hospital her sight began to fail, and the menstrual flow, which had previously been perfectly regular, ceased.

When admitted, the patient complained of headache, indistinctness of vision, affecting chiefly the left eye, great prostration, and pain over the region of the kidneys. The skin was waxy in hue, the mucous membranes were pale, the eyelids somewhat puffy, and the feet and ankles œdematous. Her tongue was covered with a light fur, and there were anorexia, nausea, vomiting, and a tendency to constipation. There was no cough, but any effort was followed by shortness of breath, and palpitation. The pulse was somewhat irregular, and counted about one hundred beats per minute. The cardiac impulse could be seen and felt over the whole of the præcordial region, and the apex-beat was situated in the fifth interspace, just within the line of the left nipple. Both sounds of the heart were accentuated, and at the aortic cartilage a soft systolic murmur was detected. The lungs were healthy. The urine, which was voided freely, deposited, on standing, a reddish flocculent sediment, and on examination was found to contain blood and albumen, with fragments of what appeared to be granular and blood casts.

For the first two days after admission (November 12th and 13th) the vomiting grew more frequent, and on the 14th the stomach rejected nearly everything introduced into it; at the same time the urine became more bloody, and the quantity passed was reduced to thirty-two ounces per diem; there was also dryness of the skin, augmented surface temperature, slight stupor, and spasmodic action of the muscles of the face and extremities. These symptoms were relieved by free diaphoresis, induced by steam-baths, the vomiting stopping entirely, the urine becoming less bloody and increasing to forty-eight ounces, and the stupor and muscular twitching disappearing to a great extent. On the morning of November 17th the above symptoms returned, attended by a trifling hemorrhage from the nose, and in the afternoon the muscular spasms became violent and constant, culminating in a general convulsion at 4 P.M. This convulsion lasted a few moments only, but was followed by another at 7 P.M., which was much longer and more severe. Immediately after the second convulsion the patient began to expectorate small mouthfuls of liquid or recently-clotted blood, and continued to do so at short intervals, in spite of the employment of astringents, until noon on the 18th. At this time, although there was no bleeding from the anterior nares, it was evident that the hemorrhage did not come from the stomach, as had been supposed, but from the nose, the blood flowing from the posterior nares into the mouth. Accord-

ingly, the nostrils were plugged with the aid of a Belloque's canula, and the bleeding was controlled at once.

The weakness resulting from the loss of so much blood, added to the previously existing debility, had brought about a condition of extreme prostration. The patient answered when spoken to, but otherwise seemed to be indifferent to what was passing around her. The pupils were contracted, the lips blanched, the nose and extremities cold, and the surface of the body bathed in a clammy sweat; the pulse was 108, and very feeble, and the aortic murmur less distinct than before; the respiration was slow and irregular; there was frequent hiccough, convulsive movements of the hands, and the urine and fæces were evacuated involuntarily. On November 19th there was little change in her condition, except that the respiration was more irregular, presenting the peculiar *tidal* character sometimes observed in cases of cardiac failure, and several purpuric spots were noticed on the tongue and face. A microscopical examination of the blood showed no increase in the number of white corpuscles. The plugs were removed from the nose early in the day, as there seemed to be no further need of their presence. On November 20th there was considerable improvement, her mind being clear, the breathing more natural, and the pulse slower and stronger. A specimen of her urine, withdrawn by means of a catheter, was high-colored, neutral in reaction, had a specific gravity of 1012, and contained a large quantity of albumen, about three-fifths of bulk tested, but was less smoky than before. The microscope revealed red and white blood-corpuscles, with granular and small hyaline casts. The quantity could not be estimated, as it was still passed involuntarily.

During the 21st and 22d the improvement continued; the bladder and rectum were no longer evacuated involuntarily, the blood disappeared from the urine, and her sight, which had suddenly grown worse after the occurrence of the convulsions, became better. On the 23d the adynamic symptoms reappeared, and death took place early on the 24th, preceded by a convulsion.

The *post-mortem* examination was made five hours after death. The lungs were perfectly healthy, and there were no pleuritic adhesions. There was a small quantity of fluid in the pericardial cavity. The heart was large, weighing eleven and a half ounces, the increase in size being, for the most part, due to simple hypertrophy of the left ventricle, the wall of which was nearly double its natural thickness. All the valves were normal, but there were several patches of atheroma about the orifice of the coronary arteries. The liver was enlarged and congested.

The kidneys were dense and lobulated, and weighed together four and a

quarter ounces, the right being about one-third smaller than the left. Their exterior surfaces were rough, their capsules opaque and adherent, and upon section the cortical portions were found to be greatly reduced in thickness, forming merely a narrow border around the pyramids, which were closer together and less distinct in outline than usual. These changes were most marked in the right kidney; in this, also, the small arteries were very prominent. The rest of the abdominal viscera were free from lesion.

Case II.—Wm. W., æt. 68, a shoemaker, was admitted to the medical ward of the Episcopal Hospital on October 6th, 1876. He denied ever having syphilis, and, although addicted to drinking in early life, had been perfectly temperate for about twenty years. His health had been remarkably good until 1870, when he had an attack of acute articular rheumatism. Three years later, while excited at a camp-meeting, he was seized with pain in the region of the heart, palpitation, and shortness of breath. Afterwards he noticed that the same symptoms were produced by any unusual effort, and, as he began to grow weak and unfit for work, he applied for relief at the Presbyterian Hospital. Here he remained for two months, and when discharged was much improved in strength, though still subject to attacks of pain, palpitation, and dyspnœa, on exertion. He resumed work, but slowly relapsed into his former condition, and in December, 1874, was admitted to the Episcopal Hospital. He again improved under treatment, and, for several months after leaving, enjoyed better health than at any time since the commencement of his sickness. In the fall of 1875, paroxysms of palpitation and dyspnœa again began to occur frequently, and were soon associated with œdema of the feet and legs, a condition that had hitherto been entirely absent. The œdema, which at first was trifling, disappearing entirely after a few hours' rest in bed, gradually became permanent, and, together with the symptoms of cardiac failure, slowly increased in severity up to the time of his readmission to the Episcopal Hospital. At this date there were extreme anæmia and weakness, considerable ascites, œdema of the feet and legs, severe orthopnœa, occurring in paroxysms, and diarrhœa. The pulse was feeble and irregular. The urine was passed in small quantities, and was high-colored and albuminous.

When I first saw the patient, on October 20th, he was much stronger and less anæmic than before, and there was only a small collection of fluid in the peritoneal cavity, though the legs and genitals were very œdematous. The respiration was frequent, twenty-eight per minute, and somewhat labored, but there was no orthopnœa, and, with the exception of sonorous bronchial râles, none of the physical signs of pulmonary disease could be

detected. The pulse was 64, very weak and irregular, the impulse of the heart could scarcely be felt, and on auscultation a systolic aortic murmur was discovered. The urine was cloudy, had a specific gravity of 1030, contained a small quantity of albumen, and numerous granular and hyaline casts, and the amount voided was about twenty-two ounces in twenty-four hours.

From October 20th to November 15th his condition grew better, the pulse becoming fuller and more regular, the œdema lessening, and the urine increasing in quantity. Subsequently the dropsy increased rapidly, orthopnœa returned, the pulse became almost imperceptible, œdema of the lungs set in, and death occurred on November 23d.

The *autopsy* was made fifteen hours after death. When the thorax was opened, the left lung was found to be adherent over its whole surface to the chest-wall, and was removed with some trouble. It was heavy, pitted on pressure, and on section a sero-sanguinolent liquid escaped in abundance. The right lung was somewhat compressed by an accumulation of liquid in the pleural cavity, and was slightly œdematous.

The pericardium was thickened and contained a small amount of straw-colored fluid. The heart was greatly enlarged, weighing fifteen and a half ounces, but its tissue was pale and devoid of firmness. The wall of the left ventricle was hypertrophied, and its cavity much dilated; the right ventricle was also dilated, while its wall was scarcely thicker than normal; both auricular cavities were increased in size. Two of the leaflets of the aortic valve were rigid, and could not be readily turned back against the aorta; this rigidity was due to atheroma, which, however, involved only the outer two-thirds of the leaflets, leaving the free margins unaffected. The cardiac surfaces of these segments were smooth, but upon their upper or arterial surfaces hard calcareous plates could be felt. The edges of the mitral valve were thickened. The tricuspid and pulmonary valves presented no alterations, except that two of the leaflets of the latter were slightly fenestrated. The aorta, for a considerable distance from the heart, was in a state of advanced atheromatous degeneration, and its internal surface was dark red in color. The orifices of the coronary arteries were surrounded by calcareous rings, and the vessels themselves were dilated and converted into brittle and rigid tubes.

There was a large collection of fluid in the abdominal cavity.

The liver was somewhat contracted.

The kidneys weighed together eight and three-quarter ounces, the right being slightly and the left considerably smaller than normal. They were lobulated and congested, their capsules, though thickened, were easily

detached, and their cortical portions were reduced in thickness. The right kidney contained several small cysts, and the left had a peculiar shape, its central portion being constricted and knotted. The other abdominal organs were healthy.

From the clinical history and the *post-mortem* appearances in the first case, it is evident that the lesion of the heart was secondary to that of the kidneys; in the second case, on the other hand, the alteration in the kidneys was most probably due to congestion, dependent upon cardiac failure.

A microscopical examination of these organs was made by Dr. Simes, Pathologist of the Episcopal Hospital, who reported as follows:

Case I.—*Kidneys.* There is a great increase of the interstitial connective tissue. The uriniferous tubules are in places widely separated, and, together with the capsules of the Malpighian bodies and the blood-vessels, are surrounded by a dense fibrous tissue.

Case II.—*Heart.* The tissue of this organ is in a state of fatty degeneration.

Kidneys. These present the same pathological changes as found in a somewhat advanced stage of interstitial nephritis.

December 14*th*, 1876.

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4. *Aneurism of the aorta: compression upon and final rupture into the œsophagus.*

By Dr. Louis Starr, for Dr. Bodine, of Trenton.

The patient was aged about 35 years, by occupation a brakeman on the Pennsylvania Railroad, with no history of syphilis. The duration of the symptoms of aneurism is uncertain, for he had undertaken to treat himself for the disease, and he had sought advice from so-called physicians, who had very little more knowledge of disease than he had.

Dr. John B. Roberts referred to a case in which a man came to the Pennsylvania Hospital for hæmoptysis. He walked to the hospital and waited in the anteroom for an hour. In the evening after his admission he spat up almost a quart of blood, and died in about two hours, which was fifteen or twenty hours after the first hemorrhage. At the *post-mortem* examination there was found a small perforation from the aorta into the œsophagus, large enough to admit a pencil, and about this, on the mucous membrane, an ulcerated surface as large as a silver half-dollar. There was atheroma of the aorta, but whether the disease began in the

œsophagus or aorta it is difficult to say. Two pounds and eleven ounces of clot were found in the stomach.

Four weeks after this a gentleman was brought to the hospital, one evening, who was said to have had a fit in the street, which was supposed to be epilepsy. The next morning about six o'clock, eight hours after the attack in the street, he suddenly fell dead perfectly cyanosed. There was found a rupture of the aorta, with little or no dilatation in the intra-pericardial portion of the vessel. The pericardium was distended with clotted blood which measured thirty fluidounces, and the coats of the aorta down to the iliacs were separated from each other by a sort of dissecting aneurism. *December 28th*, 1876.

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5. *Case of mitral, tricuspid, and aortic disease, with pulsation of the liver and pericardial adhesions.*

By Dr. John Guitéras.

W. McG., æt. 27, intemperate and a sailor; mother died of consumption, the rest of the family very healthy.

He had always been in good health, with the exception of an attack of acute articular rheumatism at the age of 22. It was followed by no apparent cardiac disease. Shortly after he contracted syphilis; and its secondary manifestations brought him twice to the hospital.

Three years ago he began to suffer with dizziness, dyspnœa, and palpitations. During the present year he was twice under treatment for œdema and other cardiac symptoms. Diagnosis, mitral regurgitation. When he came under my care, the nurse called my attention to the abdominal pulsation, a symptom that had escaped the patient's observation.

Present condition.—There is emaciation and slight jaundice. The skin is marked by scars of rupia. The face and extremities are congested, the veins of the neck swollen and the seat of pulsation. The ophthalmoscope reveals pulsation of the retinal veins. The whole trunk is rhythmically shaken and the abdomen distended with each impulse. There are two areas of circumscribed pulsation: one is at the præcordia from the third to the sixth rib, the apex of the heart being opposite the fifth interspace just within the line of the nipple; the other area of pulsation is at the epigastrium. The impulses are not synchronous. The respiration is interrupted by the jerking movement transmitted to the diaphragm.

The epigastric impulse was as marked as I ever saw it in any case of an-

eurism. The whole abdomen pulsated; but the circumscribed area at the epigastrium felt like an expansile tumor extending from under the ribs down to two finger-breadths from the umbilicus. It seemed to spring from the right hypochondrium, though the tympanic distention of the abdomen prevented the distinct definition of a border towards the left hypochondrium. The results of percussion were also interfered with by the same cause. There was pulsation of the lower right half of the thorax, and by pressing the hand under the ribs the edge of the liver could be felt pulsating even to the lumbar region. The pulsation was somewhat increased by the erect posture, and not diminished by the prone. There was no pulsation along the lumbar vertebræ, and no thrill anywhere.

Auscultation of the heart revealed a loud blowing murmur, replacing the first sound, and transmitted towards the apex and the right of lower segment of the sternum. It was also heard towards the axillary line and at the angle of the scapula. No murmur was heard over the tumor, or along the lumbar vertebræ. There was reduplication of the second sound of the heart. The asynchronous pulsations were found to correspond—that at the præcordia with the presystolic time, and the epigastric with the murmurs or systole of the ventricle as indicated by the carotid pulse; at this time an *active* retraction about the region of the apex was to be noted. I could detect no sound of the jugular valves.

The patient complained of weakness in the loins, a painful sensation of weight about the epigastrium, and marked dyspeptic symptoms.

The diagnosis of mitral and tricuspid regurgitation, with adherent pericardium and pulsation of the liver, is confirmed by the specimens described in the following notes of the *post-mortem* examination.

There was decided jaundice.

Lungs œdematous; no adhesions; considerable passive effusion on the right side.

Heart: the pericardium was closely adherent to the entire surface of the heart, but not abnormally so to the chest-walls and pleura. The left ventricle was somewhat dilated, and its walls of normal thickness. There was some thickening of the auricular walls. The cusps of the mitral valve were thickened, rigid, adherent, so as to form a typical button-hole mitral orifice, with rigid, unyielding edges. The walls of the right ventricle were slightly hypertrophied. The right auricle was dilated, and its walls thinned. The cusps of the tricuspid valve were thickened and shortened. There was thickening of the aortic valves, evidently sufficient to produce obstruction. The muscle was flabby and fatty. Weight, seventeen ounces.

The *liver* was indurated, engorged, and fatty, and the veins resembled

sinuses. The capsule was thickened, rough, and opaque. The capsule of the spleen was in the same condition, the organ weighing thirteen and a half ounces; the liver, three pounds twelve ounces.

The *gall-bladder* was remarkably thickened.

Kidneys indurated, somewhat enlarged, and such as are characteristic of cardiac disease. They were somewhat fatty, and probably the seat of interstitial proliferation.

Remarks.—When under my care at the Philadelphia Hospital, the patient had been very much relieved by the use of sulphate of iron, digitalis, and ergotin. The pulsation diminished, but was persistent to the time of his death, which was the result of progressive failure of the heart's action.

The case very much resembled one of aneurism. The persistency of the pulsation for nearly three months very decidedly pointed in this direction, as well as the vigor of the impulse, and the absence of any evidence from percussion that there was enlargement of the right lobe of the liver. Yet the general venous pulse, the pulsation along the margin of the right thorax, the jaundice, the tendency of the simulating tumor to start from the right of the median line, and the absence of other signs of aneurism and of atheroma, pointed to a pulsating liver. I have seen cases where the venous pulse was more marked than in this case, but none where the hepatic pulsation was so great. This finds an explanation in the pericardial adhesions.

The diagnosis of the latter was rendered probable by the reduplication of the second sound. A better support for the theory to explain this phenomenon in such cases could not be found. The reduplication could be heard only towards the lower segment of the heart, and to my ear it seemed clearly produced by the recoil of the chest-walls after their depression in unison with the contracting ventricle.

The systolic pitting of the region of the apex-beat also proved the existence of pericardial adhesion. The presence of this symptom in the present case proves, contrary to Skoda's opinion, that the existence of adhesions between the pericardium and the chest-walls is not necessary for its production.

The jerking movements that this adherent heart must have transmitted to the diaphragm must have had much to do with the production of the interrupted respiration. I also believe that they contributed to increase the abdominal pulsation.

It is worthy of note, first, that this condition alone, without the tricuspid regurgitation, could have been sufficient to cause the general venous

pulse, inasmuch as the inspiratory force, an important aid to the venous circulation, was rhythmically interrupted by the heart's action; second, that an abdominal aneurism beating against the diaphragm could give rise to the same symptoms.

The absence of a presystolic and aortic obstructive murmur, notwithstanding the lesions, may be explained in the usual manner.

Dr. Longstreth asked Dr. Guitéras whether the liver extended below the ribs.

Dr. Guitéras said it did not in the mammary line, but that in the median line it extended to within an inch of the umbilicus.

Dr. Longstreth asked the condition of the right side of the heart as to the presence of blood.

Dr. Guitéras did not know.

Dr. Longstreth thought it peculiar that the liver should extend so far forward and downward as to produce so remarkable a pulsation. The pulsation is generally downward, but the organ is always extended beyond the edge of the ribs, and not to the left in this instance.

Dr. Guitéras said the indurative changes referred to, which were so marked in the kidney and spleen, had also commenced in the liver; that it was a little hardened, which might account for the absence of enlargement. He thought the left lobe pulsated more because it was not so much covered in by resisting chest-walls and diaphragm; and he also called attention again to the transmitted cardiac impulse through the diaphragm and adherent pericardium, which would especially influence the left lobe of the liver.

Dr. C. B. Nancrede asked whether it was customary to find pulsation of the retinal veins in heart cases.

Dr. Guitéras said he had only looked for it in one other heart case besides this, and this was in a case of simple tricuspid regurgitation, and he could see no way in which other than tricuspid lesions could give rise to such a symptom.

Dr. Nancrede said he asked because he thought he had observed pulsation of the retinal veins where there was no heart trouble. He wanted to know whether the pulsation involved the whole organ (the liver).

Dr. Guitéras said that there were other causes, not connected with the heart, giving rise to pulsation of the vessels of the fundus. In regard to the liver, the notes stated that the pulse was more marked in the left lobe, but that it could be felt by pressing the fingers under the right margin of the thorax.

Dr. Nancrede thought that these cases of venous pulsation in the eyes

were explainable by the withdrawal of the inhibitory influence of the sympathetic nervous system, as all the cases he had seen were unaccompanied by any heart trouble. With regard to this present case, he thought it conceivable that as in the cerebro-spinal system we have an inhibitory reflex influence set up by irritation of the afferent nerves, he did not see why the same thing could not obtain in the sympathetic system. In the present specimen the two cardiac nerves must have been compressed by the plastic lymph which bound down the pericardium to the heart.

Might this not have set up an inhibitory influence which, removing the nervous influence of the sympathetic from the vessels of the liver, would cause a pulsation and the *pseudo-cavernous* condition of that organ? We have this passage of arterial blood into the veins actually demonstrated for us by observed cases where it has issued from a vein after prolonged bleeding. As is well known, the sympathetic nervous system gives out before the cerebro-spinal: consequently the capillaries dilate and pass the blood too rapidly to allow of its becoming venous. In further illustration of this point Dr. Nancrede mentioned a case which he had presented to the Society some years ago, where profuse diuresis was caused by the pressure of an aneurism upon the cœliac sympathetic plexus of nerves, which was clearly due to the dilated condition of the capillaries of the kidney rendered possible by removal of the inhibitory influence of the sympathetic.

Dr. F. P. Henry said the principal nerve concerned in such a reflex action was that of Cyon, a sensitive cardiac nerve, irritation of which, produced artificially by experiment or through labored action of the heart, is reflected to the abdominal blood-vessels, which it paralyzes and so relieves the overstrained organ. We can therefore attribute a certain amount of congestion, and possibly pulsation, to nervous influence. Dr. H. had often seen retinal pulsation where there was no heart disease, although he thought that in this case it was produced by heart disease. It is, however, of no great diagnostic value, as it is a frequent accompaniment of trifacial neuralgia and hyperæsthesia of the retina due to overstrain of the eye, especially in connection with some anomaly of refraction.

Dr. Guitéras said that there was no necessity for bringing up this nervous theory. The mechanism of the general venous pulse was a well-known and very simple one: each contraction of the right ventricle sends a wave back over the insufficient tricuspid valve into the venous system. This may even give rise to a sound in the jugular valves, but as soon as their resistance is overcome the general venous pulse becomes apparent. As there are no valves in the hepatic veins, the liver is the first to suffer. In regard to nervous disturbance I may say that there was a peculiar absence

in this case. The pulse was regular, and there was no cardiac pain. I am aware that some nervous symptoms have been explained in cases of pericarditis by irritation of the phrenic nerves, such as hiccough, angina, palpitations; but they were all absent in this case.

Dr. Henry said the nerve he referred to was a branch of the pneumogastric, and he thought it no stretch of theory to call in its action to explain pulsation of an abdominal organ: indeed, if such pulsation were merely mechanical we should expect to find it constantly.

Dr. Longstreth asked whether the second sound at the aortic orifice could not be caused by a condition of the aortic valves. He thought Dr. Guitéras seemed to indicate that the reduplication of the second sound was pericardial as to its origin. Was not the condition of the aortic valve such as to allow regurgitations? He thought the aortic valves seemed shortened.

Dr. Guitéras said it was not a murmur, but a reduplicated second sound, and it is a result of a recoil of the chest-walls returning to their place after being dragged down by the contracting ventricle, which they follow on account of the adherent pericardium. The aortic valves seemed to close very well, but there was an aortic *obstructive* thickening which did not give rise to any murmur. *February 8th*, 1877.

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6. *Heart, liver, and kidneys from a case of cardiac valvular disease.*

By Dr. F. P. Henry.

L. W., æt. 14, printer, was admitted to the Episcopal Hospital on July 10th, 1876, with acute articular rheumatism. He had had two previous attacks, involving nearly all the joints. When admitted, both knees and ankles were swollen, very painful, and red. On July 11th he was put upon the use of salicylic acid, gr. v every hour, and the joints were painted with tinct. iodine. On the evening of the same day he was almost free from pain. On the 12th he took thirty grains of the acid, when it was stopped, as the "cure was complete; swelling, pain, and stiffness having all vanished." On July 13th he was allowed to sit up, and on the 15th, it is stated, "he still continues in excellent condition." On the evening of the 15th he had a relapse, the knees and ankles being again attacked; this followed imprudent exposure to the air on one of the porches, where he had gone without permission. The treatment by salicylic acid was resumed, and the pain was almost immediately relieved. On the 17th he complained of severe pain over the cardiac region, with dyspnœa. A

friction-sound was heard. Subsequently an endocardial murmur was detected; valve affected not stated. From this time on, the symptoms were those of gradually increasing disorder of the circulation.

The boy was in bed when I took charge of him on January 1st, but was soon able to get up, and did so daily until about two weeks ago. He then took to bed again with symptoms of orthopnœa, sick stomach, and pain in right side. When I first saw him he was cyanosed, and his eyelids œdematous. The transverse area of cardiac dulness was increased, and the impulse was seen and felt over a wider extent than normal, being quite perceptible to both sight and touch in the epigastric region. The auscultatory signs were by no means so distinct as the very decided symptoms led one to expect. There were murmurs with both sounds, heard most distinctly at the apex; in the sitting posture the murmur corresponding in time with the second sound was only heard; standing developed the systolic murmur, which somewhat resembled a friction-sound. There was marked jugular, venous pulse. The boy died suddenly on Saturday, at 1 A.M.

Autopsy.—The *heart* weighed one pound nine ounces, and the pericardial layers were adherent. Both ventricular cavities were dilated, but especially the left; this condition decidedly predominating over hypertrophy. The aortic valves were thickened; their edges uneven and eroded; the portion that in healthy valves is found internal to the line of closure was gone. The left auriculo-ventricular orifice was dilated, and the mitral valves along the lines of closure were thickened and covered with minute "vegetations." The tricuspid presented similar appearances in a minor degree.

The *lungs* were but slightly congested, and presented here and there a few stripes of pigment, but were far removed from the condition known as brown induration.

The *liver* weighed two pounds and three ounces, and presented the nutmeg appearance in a marked degree on section.

The *kidneys* weighed five ounces each. The relative amounts of cortical and medullary substance were about normal. These organs were paler and denser than usual. They were evidently fatty, and might, from the gross appearance, be supposed to be granular, but the microscope shows no development of intertubular connective tissue. I omitted to mention that the urine contained albumen, but was not examined for casts. The capsules of the kidney were in parts adherent, portions of the parenchyma coming away with them.

I believe that in this case the aortic valvular disease was primary.

This led to hypertrophy, followed by dilatation, which gradually increased, involving the left auriculo-ventricular orifice to such an extent as to cause mitral insufficiency. But for the dilated auricle, an aortic systolic murmur would doubtless have been detected; the sounds heard at the apex being those of aortic and mitral insufficiency.

The presence of a pathological condition of the liver due to great and long-continued venous congestion, in connection with mitral insufficiency, is of considerable interest; and especially when it is considered that the lungs, whose vascular system is in direct relation with the diseased valve, were scarcely congested. I submit the following explanation of the group of lesions, consisting of mitral disease and nutmeg liver, with but slight congestion of the lungs.

A certain amount of tricuspid insufficiency is considered normal by most physiologists since the time of Hunter, and is known as the safety-valve action of the heart. During sudden exertion more blood is returned to the right heart, through muscular pressure upon the veins, than can be propelled through the pulmonary circuit, and consequently at each ventricular contraction there is a regurgitation of blood, distending the veins and manifesting itself through the venous pulse. The lungs, as it were, refuse to receive more blood than can be aerated. The same condition may obtain in inflammatory affections of the lungs and in mitral insufficiency.

In the latter affection the lungs constantly approach a condition which normally obtains only during muscular exertion, and the safety-valve action is in continual operation. One result of this is hepatic congestion, which is conservative, a gland being less liable to be affected injuriously by congestion than a purely vital organ such as the lung, brain, or heart. It relieves itself through its secretion, or, as in the case of the liver, through its mingled secretion and excretion. It is congested physiologically at certain intervals, notably soon after eating, and therefore a pathological congestion may be invoked to explain the anorexia which is so frequent a symptom of cardiac disease. In healthy individuals, and especially in young persons, after sudden or even moderate exertion, such as rapid walking, a pain in the right side is frequently complained of. I consider this as due to hepatic congestion from the normal tricuspid insufficiency. It is more commonly observed soon after eating, when the liver is already congested. In the case of the boy L. W., there were complaints of pain over the right lobe of the liver; the same as would be due to muscular exertion. Indeed, the condition of a patient with marked cardiac valvular disease, even when at rest, so closely resembles that of a healthy individual making violent voluntary exertion, that it would be interesting to deter-

mine whether the same tissue-changes, as indicated especially by the urine, fæces, expired air, and perspiration, do not occur in both instances.

February 22d, 1877.

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7. *Death from embolism in diphtheria.*

By Dr. John M. Keating.

J. B., æt. 35, was under treatment in the Philadelphia Hospital for acute articular rheumatism for some time. The joints most affected were the ankles and the wrists. The attack finally became subacute, and he was obliged to remain in the hospital on account of the inability to do much walking. He had had no inflammation of the cardiac membranes, nor had any murmur been detected during the rheumatic attack.

Two days before his death he called my attention to his throat, which he said was painful and the muscles felt stiff upon deglutition. I found the pharyngeal arches red, swollen, and covered with patches of grayish membrane. He had slight fever, and complained of great weakness, though at the time I saw him he was walking about the ward. The most active treatment was immediately instituted: beef-tea, quinia, iron, absolute rest, and an application of tinct. ferri chl., salicylic acid, potass. chlorat., and glycerine, made to the throat. That evening his condition was somewhat improved. Early the following morning the resident physician, Dr. Philips, was called, and found the patient comatose, pulseless, cold, respirations exceedingly rapid, and the heart beating with great rapidity and irregularity. The symptoms all pointed to heart-clot.

The specimens which I show were removed immediately after death. The clot, which is white, hard, and very large, existing in the right ventricle, extends through the venæ cavæ, and throughout the whole venous system; that in the left heart is smaller, but of the same character, and is prolonged not only through the ramifications of the pulmonary vein, but into the aorta and its branches. The suddenness of the attack, its severity, and the rapidity with which almost complete coagulation of the blood took place, have an especial interest in the fact that the patient was rheumatic.

March 8th, 1877.

8. *Heart showing anomalous arrangement of the leaflets of the pulmonary valve, these being four in number.*

By Dr. J. C. Wilson.

This heart, which is enormously enlarged and dilated, was removed from the body of T. M., an Irish laborer, 55 years of age, who died in my ward at the Philadelphia Hospital, February 8th, 1877, of granular and fatty degeneration of the kidneys, with general anasarca and effusions into the serous cavities.

The man's death occurred ten days after his admission to the house, the clinical history of the case whilst it was under observation being the description of the ultimate dyscrasia of such renal affection.

I omit it, for the reason that the specimen is shown simply as an illustration of the valve-malformation.

The heart weighs twenty-five and a half ounces. Both ventricles are dilated, the right greatly so. The wall of the left is considerably, that of the right slightly, thickened. The mitral and tricuspid valves are but little changed; the aortic semilunar valves are thickened, and small masses of calcareous matter are situated in the sinuses behind them.

The pulmonary valve is composed of four semilunar segments. Of these, three are quite normal in appearance and of nearly equal size; the fourth, which lies between the posterior and the right lateral segments, is somewhat less than half the width of the others, but of nearly the same depth. Like them it has a distinctly symmetrical convex marginal attachment to the wall of the artery, and when carefully examined upon the handle of a scalpel shows a slight thickening at the middle of its free margin, which corresponds to the corpuscle of Aurantius. There are elongated slit-like fenestrations near its edge, such as are often encountered in valves otherwise normal. The sinus of this little extra valve communicates with that of the posterior leaflet. In June, 1876, I exhibited to the Society a similar specimen. In that heart, as here, the fourth leaflet was smaller than the others, but like them in shape and outline, especially as regards its free margin and the margin of attachment. It occupied the same position as in this specimen, namely, between the posterior and the right segments.

It was on that occasion suggested by Dr. Pepper that the malformation was due to some antecedent morbid process, by which the long posterior segment had formed a linear adhesion to the wall of the artery, and thus been divided into two parts. After the fresh opportunity for study afforded

by the analogous specimen before us, I am convinced that this is not the case. On the other hand, the anatomical completeness of the small fourth segment, its symmetrical outline, its faintly-marked but distinctly-recognized corpuscular thickening in the middle of the free edge, and the entire absence of similar disease-signs in the parts immediately adjacent on the right side of the heart, all indicate the origin of this rare malformation in the processes of specialization of points in early fœtal life by which the valves are formed.

Henle alludes to the infrequent occurrence of such supernumerary valvelets, and Peacock, in his book on malformations of the heart, has collected several cases. *March 8th*, 1877.

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9. *Partially-closed foramen ovale—sudden death.*

By Dr. J. T. Eskridge.

The child whence the specimen was derived was 20 months old at the time of its death, and had enjoyed moderately good health previously. On the afternoon of March 9th, 1876, it was wheeled in one of our squares for an hour. Although the day was a mild one for the season, it apparently took cold, and was noticed to cough some during the night, but it seemed well on the following morning. After the mother had dressed her babe she was dancing it on her knee, when it suddenly became convulsed and cyanosed, and died immediately. There was no history of cyanosis previous to the occurrence just before death.

The *post-mortem* examination, made on the following day, showed—

The air-passages healthy, save a slight venous congestion of the lungs. There was, however, an imperfect closure of the foramen ovale, the opening being large enough to permit a small-sized lead-pencil to be passed through it. The stomach healthy. Examination of the brain was not permitted.

Could such a condition of the heart cause so sudden a death in a child apparently healthy?

Dr. Guitéras said that this condition is a cause of death in the new-born, but it was doubtful whether death could be attributed to this condition in the present case, for it should be remembered that the foramen ovale remains open for some time after birth, and it is rather the direction of the currents of blood from the ascending and descending venæ cavæ which prevents the blood from passing over to the left auricle, than the closure of the orifice. It is reasonable to suppose that some sudden nervous

disturbance might result in such derangement of the currents of blood that death might occur.

Dr. Wharton Sinkler said the presence of a patulous foramen ovale did not necessarily imply cyanosis. This condition of the auricular septum is often met with in *post-mortem* examinations of old persons, as illustrated by the case of a woman, 60 years of age, whose heart he had presented to the Society some time ago. Here the opening was sufficiently large to admit a lead-pencil, and there were no symptoms during life which pointed to the condition. He thought that in the absence of an examination of the brain, no condition presented by the specimens shown could be considered as sufficient to cause death.

Dr. Tyson asked whether any other cause of convulsion was found, as undigested food in the stomach. He thought it not impossible that the convulsion might have produced such a derangement of the currents of blood that the venous blood would thus pass over to the left side of the heart, and thus cause the cyanosis.

Dr. Eskridge replied that no cause of the kind suggested could be found.

Dr. Sinkler said that the fact that convulsions themselves caused cyanosis should be borne in mind.

Dr. Henry said the question arose as to whether convulsions occurring under these circumstances (with patulous foramen ovale) were more serious than those that occurred, for instance, in the period of dentition.

March 22d, 1877.

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10. *Aneurism of aorta.*

By Dr. John M. Keating.

The specimens which I present to the Society were removed from the body of an Italian, aged about 45, who died suddenly a few hours after admission to the Philadelphia Hospital. He stated that he was subject to paroxysms of asthma, with a feeling of compression at the sternal notch, which accompanied palpitations of the heart and had been attributed to "heart disease."

The area of cardiac dulness was said to have been greatly increased, with extended and more pronounced apex-beat, and at the same time a murmur of suffused mitral regurgitation was noted. The man died quite suddenly, and I had no chance of examining him before the autopsy.

Autopsy.—The body was well nourished, of great muscular power,

showing, though no history had been obtained, that his occupation had not been a sedentary one. On uncovering the sternum, the pericardial sac was filled with serous contents, the membrane itself presenting no evidence of any inflammatory trouble.

There was also hydrothorax, the amount of contained fluid being very great, equal on both sides, free from shreds, and but slightly tinged with blood.

The lungs were gorged with venous blood, but were otherwise healthy. The heart itself was much hypertrophied, being about one-half again its normal size. The cavities were filled with dark, soft clots. There was no valvular disease whatever.

Almost at its point of departure the aorta presented an appearance of atheroma in many patches; these were small, and many were only made evident by grating the knife as it was rubbed edgewise along its surface. Just above the valvular attachment on the posterior surface of the aorta was an opening about *one-half inch* in diameter, with smooth, firm edges, somewhat oval in shape, communicating with an aneurism, the cavity of which, when emptied of clots, was about two inches in diameter. The tumor, when filled, must have pressed directly on the left auricle.

A short distance above this was another opening, with an oval, serrated edge, communicating with an aneurismal sac of much larger size. This was found to be the size of a small fœtal head at full term. It pressed directly upon the trachea at and above its bifurcation, and extended to the right and somewhat behind the trachea. The walls were thick and elastic; no rupture of either sac had taken place.

The peculiar interest attached to this case was involved in the question of the immediate cause of death, which occurred very suddenly. This fact alone would point to the pressure on the pneumogastric and its branches, and sudden interference with the heart's action. Nevertheless, there are many points in the *post-mortem* appearances which lead us to consider the obstruction to the entrance of air, either in the larynx or trachea, as the cause of death.

We find, upon dissection, the complete involvement of the nerves on the right side of the trachea, in consequence of which we naturally presume there must have been pressure, with its results.

The cyanotic condition of the lungs shows that aeration was totally interfered with. If, as is stated, the *inferior* or recurrent laryngeal nerve is the nerve of inspiration, of course the pressure of the tumor upon it would cause the difficulty which in this case existed. Expiration would receive no impediment. What, then, would be the result? The difficulty

in getting air in, and the extreme facility by which that already in the lungs could get out, would naturally cause an attempt at a vacuum in the intra-pleural space, which would be followed by hydrothorax. Of course, after the serum has accumulated, an additional obstruction is added to prevent the entrance of air, the circulation is checked, and heart-failure occurs. In those cases where expiration is impaired, as emphysema, for instance, I believe we find œdema of the lung at the autopsy.

Dr. Seiler said that, when present, the voice is a very valuable characteristic. In many cases of goitre there is marked aphonia, due to pressure of the tumor upon the laryngeal nerve; but there are also cases of aphonia in which no such pressure can be shown to have existed.

Dr. Hodge said the point was a very interesting one. The general explanation of the modified voice is by pressure on the nerves or by alteration in the size of the trachea. Cases occur where it is evident that the pressure on the trachea is insufficient to produce an encroachment on its lumen, and yet the patient appeared to die of dyspnœa. Mr. Lennox Browne, of London, explains the result by pressure upon the muscular tissue between the rings of the trachea interfering with its proper action.

Dr. Seiler said it was almost impossible to reduce the lumen of the trachea to such an extent as not to permit sufficient air to pass through. We use very small tubes in the operation of tracheotomy, and yet they seem all-sufficient for the air-supply. In removing polypi, the cut edges of the cord often grow together, leaving a very narrow orifice for breathing, and yet there is no dyspnœa. These fatal cases are often explained on the supposition that a sudden momentary pressure on the recurrent laryngeal nerve produces paralysis of the abductors for a time and allows full play of the adductors to close the glottis.

Dr. Hodge said the point made by Dr. Seiler was important. As regards goitres, the pressure caused by them is seldom so great as to prevent the free passage of air. There is another class of cases presenting dyspnœa,—the syphilitic ulceration in the interior of the trachea,—where the nerves are not involved, and yet we have fatal dyspnœa.

Dr. Seiler recalled a case in which tracheotomy had been performed and the patient died under the operation. There proved to be almost complete closure of the trachea by cicatricial tissue, three inches below the seat of operation, and the immediate cause of death was a small clot of blood which had descended the trachea and filled the narrow opening which had remained.

Dr. Hodge said much depends upon the condition of the patient,—

some temporary cause producing temporary dyspnœa. In other cases, where there is a continuous obstruction, there is a continuous dyspnœa.

Dr. H. further said it was not infrequent for tracheotomy to be performed at a point supposed to be below the seat of obstruction, and after the operation the position of the disease or external pressure to be found even lower down. *April 26th*, 1877.

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11. *Aneurism of the aorta.*

By Dr. E. E. Montgomery.

M. S., æt. 57, native of this city, married, mother of sixteen children, always healthy, and a hard worker. Her husband was a drunkard, whom she had supported for the last twenty years, receiving in return only abuse. She has had a slight cough ever since her change of life, which was two years ago. During the last three weeks the cough has been more severe, of a rasping character, accompanied by expectoration and pain in the neck. Appetite poor, but no difficulty in swallowing.

I was called to see her on the evening of the 17th of April. She complained of difficult breathing, a severe rasping cough, some pain in the neck, and headache; pulse was rapid and feeble; right side of neck seemed more prominent than left. Placing my hand upon it, I found pulsation so distinct as to raise my fingers. The tumor filled up the space between the trachea and sternum. No bruit could be heard, on account of the noisy respiration. My diagnosis was aneurism of the arteria innominata, and I ascribed the cough to the pressure of the tumor upon the trachea. To deaden the irritation of the air-passages she was given a cough-mixture containing morphia, spt. chloroform, and lemon-juice, and ten drops of tr. digitalis three times daily, to quiet the heart. At my next visit I found her much more quiet. April 22d, gave potass. iod., gr. v t. d. April 26th I was sent for in great haste, and, upon my arrival, found her dead. Her death was not attended with any struggle or increased difficulty of breathing.

Autopsy, twenty-four hours after death, assisted by Dr. Abel Price, U.S.N.—Upon opening the thorax the lungs were found healthy, excepting a slight emphysema. Blocking up the superior part of the thorax was an aneurismal tumor. It had eroded the upper part of the posterior surface of the sternum over a space two inches in diameter through one-half the thickness of the bone. The eroded surface of the bone formed the anterior wall of the tumor, the arterial coat being entirely removed.

Removing the parts in connection with the heart, the aneurism was found to spring from the beginning of the arch alongside the arteria innominata. Between it and the heart a portion of the aneurism was filled with a coagulum. The whole arch of the aorta was found dilated, and its coats had undergone atheromatous change. The coagulum extended into the left ventricle, so that more than likely the attempt to produce coagulation but served to hasten her end. *May* 10*th*, 1877.

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12. *Pericarditis; pleural effusion; pyæmic abscesses in walls of heart.*

By Dr. A. F. Müller, for Dr. R. W. Deaver.

G. O., æt. 6½, on Friday, May 25th, fell, running a needle in his right leg, just above the knee, a part of which remained in the leg so deep as not to admit of removal. The two following days he appeared perfectly well. On Monday evening I found him restless and delirious, with respirations 40, pulse 144, temperature 105°. There was a very slight swelling of the injured leg; he made no complaints when the leg was extended or flexed. Physical examination at this time revealed nothing. His temperature and pulse remained almost unchanged, whilst his respirations gradually increased to 66. On Wednesday evening I first detected pulmonary dulness and moist cooing râles in lower part of right lung. On Thursday morning there were very marked and distinct pericardiac and pleural friction-sounds, with some increase of the area of dulness. He died at three o'clock on Friday morning.

Post-mortem examination, forty hours after death.—Marked discoloration of abdomen, extending on right side almost to nipple. Slight œdema of right leg. A piece of needle, five-eighths of an inch in length, found deep in adductor magnus muscle. There was apparently no irritation produced here. The saphenous vein was free from thrombus or inflammatory change. The intestines were slightly distended with gas, otherwise perfectly healthy. Mesenteric glands and liver normal. Both pleural cavities contained effusion, and both pleuræ covered with recent organizable lymph. A portion of lower lobe of right lung completely carnified. The rest of lung-tissue —right and left—healthy. The pericardial sac contained about three ounces of serum. The heart was covered with a layer of recent lymph, nearly a line in thickness, and contained in its substance several small pyæmic abscesses. *June* 14*th*, 1877.

IV.—THE ORGANS OF RESPIRATION.

1. *Extensive disease (syphilitic) of pericardium, pleuræ, and peritoneum; paracentesis of chest and abdomen.*

By Dr. Wm. Pepper.

James Murray, æt. 26, single; nativity, Philadelphia; occupation, huckster. Admitted August 29th, 1876, to Philadelphia Hospital. Family history good. He stated that he had been a healthy man until five years ago, when he contracted a multiple chancre, which was followed by buboes, and five months after by an eruption, which has resisted treatment obstinately. He had been a drinking man, and in the habit of drinking large quantities of undiluted liquors early in the morning before taking any food.

About the first of last May he noticed a slight yellowness of the skin, and his abdomen enlarging; he also noticed that the quantity of the urine was less than natural. Since then his health had been failing fast, and his belly had greatly enlarged, until it measured forty-three inches at the umbilicus; also great œdema of the lower extremities and of the lower parts of the belly walls. Tongue was slightly coated, and some symptoms of indigestion and some diarrhœa. He passed twenty-eight and a half ounces of urine daily, which was of a very high color, but did not contain any albumen. On September 10th he was suffering extremely from overdistention of the abdomen. In addition, it was found that an effusion was occurring in the left pleural sac. The heart was pushed towards the right, apparently; but it was impossible to detect any apex-beat, and the cardiac sounds were very feeble and distant. In addition to this, dulness extended farther to the right of the lower part of the sternum than seemed explicable merely by displacement of a healthy heart. Paracentesis was performed through linea alba, and twenty-three and a half pints of light straw-colored fluid were drawn off, with immediate relief. On September 29th the effusion in the left chest had increased, so as to cause great distress. By means of an aspirator eight and a half pints of amber-colored fluid were drawn off. This was followed by great relief; but the heart did not return to its normal position, nor did its sounds or apex-beat become more dis-

tinct. The left lung expanded very imperfectly, and it became evident that, with the exception of the upper lobe, there was great thickening of the pleura over this lung. On October 4th the patient's distress was again extreme, and colliquative diarrhœa had set in. The dulness over the left lung now had attained its former proportions, and paracentesis was again performed, but only succeeded in drawing off eighteen fluidounces. The abdomen was tapped a second time, and five and a half pints of fluid were drawn off. The patient was somewhat relieved, but slowly sank, and died October 22d.

Autopsy.—Brain not examined.

Right lung presented some thickening of pleura, with adhesions in points. On *left* side both layers of pleura were enormously thickened and matted together, so as to form a layer nearly one-half inch thick. The pleural sac was thus obliterated, with the exception of two cavities in the substance of the thickened pleuræ. One of these, in the side, was capable of holding a pint, was lined with shreddy lymph, and was evidently the point from which the last accumulation of fluid had been drawn off. The other was small, with capacity about two fluidounces, and was seated on the posterior surface of the lung. The left lung was compressed, but free from organic disease.

The pericardial sac was obliterated and the membrane enormously thickened. There had evidently been old pericarditis. The cardiac layer was encrusted with calcareous matter. Then came layers of organized lymph, and then the much thickened parietal layer. The left lung was closely adherent to the outer side of the pericardial sac.

The liver was fatty and cirrhotic. There was old peri-hepatitis, affecting not only the convexity, which was covered with layers of false membrane, but the concavity, and especially the region about the transverse fissure, where dense thickening of the capsule and cellular tissue had occurred. It could not, however, be found that any actual compression of vena cava had resulted. The walls of the gall-bladder were white, dense, and fibrous.

The spleen was enlarged, its tissue firm; trabeculæ enlarged. Capsule presented marked localized peritonitis. The kidneys were in a state of albuminoid degeneration. *October 26th*, 1876.

2. *Embolic pneumonia.*

By Dr. John Guitéras.

J. W., æt. 45, admitted to the hospital November 27th, 1876.

Both parents died of consumption about the age of 60. He has lost four sisters and two brothers from the same disease.

He has always been a healthy man, but very intemperate for the last three years.

Notes taken December 1st.—Ten or twelve days ago he contracted a heavy cold, which did not confine him to bed until the day of admission.

Since admission, the pulse has been frequent, considering the slight febrile movement, and acceleration of respiration. There has been more or less constant and distressing hiccough. To-day his body is covered with a profuse perspiration. He is drowsy, and there is some wandering delirium.

By physical exploration I detected an area, about one and a half inches square, at the margin of the chest and within the line of the left nipple, where marked blowing breathing and dulness were present. Loud sonorous breathing was heard over the rest of the chest.

On the 2d there was prune-juice expectoration, and a friction-sound was heard by pushing the stethoscope under the ribs. The bronchial breathing was rendered indistinct by moist crackling at the circumscribed spot of consolidation. Pulse 116. Heart-sounds normal.

On the 3d, expectoration continued. The fluid under the small area mentioned broke up into larger bubbles. The consolidation extended upwards. Subsequently this extension of the inflammation continued, the typhoid state became more marked, and the patient died of œdema of the other portions of the lung. At no time was the expectoration fetid.

December 3d, evening, P. 108, R. 40, temp. 100°. 4th, morning, P. 116, R. 25, temp. 101°; evening, P. 112, R. 44, temp. 101°. 5th, morning, P. 108, R. 44, temp. 99⅘°; evening, R. 48, temp. 98°.

Post-mortem examination.—The diaphragmatic and pericardial pleura were minutely injected, and the seat of recent adhesions, especially towards the left.

The right lung was decidedly œdematous. The inferior left lobe was solid (red hepatization) in the central portion, surrounded towards the pleura by a layer of healthy lung nearly one inch deep. This explains the absence of signs of consolidation in the back.

Near the inferior border of the upper lobe, anteriorly, an area about one and a half inches in diameter, of a black color, was seen under the pleura. A section of this lobe was made through this spot, revealing a wedge-shaped cavity, with the base at the pleura and the apex not far from the root of the lung. It contained the dark, grumous detritus of gangrene, though odorless. The walls of this cavity were regularly excavated, showing that they were formed by the connective-tissue partitions between the dead and living lobules. The blood-vessel entering the apex of this wedge was found occluded by a white, fibrinous embolus, which was not yet adherent to the arterial walls. The upper portion of this lobe presented the granular section of red hepatization; but the other portions of the lung surrounding the cavity presented a marbled appearance. The dark connective-tissue partitions were visible, separating lobules of more or less reddish and whitish hues: in my opinion they were lobules in the different stages of catarrhal inflammation and caseous degeneration.

The anterior leaflet of the mitral valve presented a patch of atheroma, evidently not interfering with its function. The right auricle was filled with a large ante-mortem clot. Some shreds from it extended into the ventricle, becoming entangled with the tendinous cords. The clot was quite adherent to the walls, firm, white, and somewhat laminated.

The other organs were healthy. No tuberculosis.

Remarks.—Two very interesting points present themselves for discussion, —viz., the origin of the clot, and the significance of this catarrhal inflammation. In regard to the first, I suggest that the primary trouble was a bronchitis and catarrhal pneumonia (it is to be remembered that the patient was peculiarly predisposed to such form of inflammation by a hereditary taint); that this pneumonia may be sufficient cause for the formation of the clot in the right heart; that from hence the embolus was washed into the pulmonary circulation, causing gangrene of parts already in danger of slow death from caseous degeneration. The other question refers to the importance of this specimen as an illustration of the inflammatory origin of phthisis. The inflammation had spread from lobule to lobule. The lobules nearer the larger bronchi seem to be further advanced in the process of caseous change. The patient had only been ill three weeks, and the degeneration is not complete,—yet sufficiently so to make it very probable that either acute or chronic consumption of the lungs would have taken place had not the end been hastened by the gangrene and the croupous pneumonia of other portions of the lung. The latter seems to have been due merely to extension of the inflammatory process. How often may this

combination of the two forms of pneumonia exist in those cases of adults where we find phthisis following pneumonia,—a pneumonia that we believe to be solely croupous or lobar?

The hiccough is accounted for by the irritation of the terminal fibres of the phrenic, and also of its trunk as it passes between the pericardium and lung: indeed, here the evidences of inflammation were much more decided.

Dr. C. B. Nancrede thought it not impossible that there might be some other starting-point for the thrombus. Thus, there are several cases now on record where a simple bruise of the thigh has resulted in a most extensive phlebitis, which has not even been suspected; and so it might have been in this case. He did not understand why the embolus need start in the lung, go thence to the heart and back to the lungs again, as the anatomical arrangement of the capillaries of other organs would be more likely to have arrested it. This case seemed interesting in connection with the pathology of pyæmia.

Dr. N. had been struck with the exceedingly mechanical views which seemed to impress most pathologists. He thought that much more might be accomplished if we followed the plan of John Hunter and studied first the physiology of an organ before we tried to understand its pathology. If, for instance, we examine the physiology of the lungs, we find that in them the blood is aerated and that here a large amount of carbonic acid is eliminated. What is the result of interference with this function? See what is found in one disease where there is not sufficient oxygen present to get rid of a comparatively innocuous substance. Whether there be deficient oxidation on the one hand, or too much sugar on the other, to permit its oxidation in the lungs, certain it is that in glycosuria curious conditions result, among which are furuncles and other suppurative affections, even spontaneous gangrene of an extremity having been observed. If we examine the functions of the liver, we find it gets rid of a large amount of carbon and hydrogen in the shape of the bile, that it is a sugar-forming organ, that it has to do in some degree with calorification, and, finally, that it converts the crude albuminose into albumen. The liver in like manner excretes a substance, cholesterine, which when retained in the blood for a prolonged period has been known to set up symptoms similar to those of uræmia.

It was hardly necessary, Dr. Nancrede said, to allude to the depurating function of the kidneys; but he would direct attention to those inflammations of serous membranes found in kidney-diseases, and especially would recall the fact, that the arthritic affections in pyæmia have their

origin in the same kind of membrane that is so frequently spontaneously inflamed in Bright's disease.

The skin likewise has an important part in excretion, acting to a certain extent vicariously to the kidneys,—indeed, so actively in certain cases of acute suppression of skin-function that the skin has been found covered with a white pellicle of urea. Now, may not all these facts concerning the functions of the various organs have something to do with pyæmia?

One of the most recent surgical authorities remarks that the views of Virchow and his school are not satisfactory to him, and he believes that pyæmia and septicæmia are the result of the same cause, in the one case (septicæmia) the patient dying too soon to have any secondary complications, while in the other the same cause favors the occurrence of emboli. Dr. N. said that he wished it clearly understood that by pyæmia he meant only that form of blood-poisoning accompanied by the so-called *metastatic* abscesses; for he considered *septicæmia* to be an entirely different affection.

In examining the class of patients who have this disease, it will be seen that they are those whose blood tends to form a weak clot. Any depressing cause,—too frequently present in such cases,—such as improper food, bad air, etc., and, above all, hemorrhage, will produce a state of hypinosis, so that the blood forms a soft, *friable* clot. The occurrence of pyæmia in such cases has been explained by the readiness with which absorption takes place when the vascular system is comparatively empty. This is undoubtedly true with regard to *septicæmia*, but not with regard to *pyæmia*.

When we consider the interference with function, and consequent retention of excrementitious matters, resulting from extensive infarction of the lungs, liver, kidneys, etc., it seemed to Dr. N. that there was no occasion to go outside of the economy for a septic blood-infection. We constantly have a typhoid condition, resulting in death, when any one organ, such as the kidney, is chronically incompetent to perform its functions: how much more likely is this to obtain when not one but *several* organs are involved, and that so suddenly as not to permit a vicarious action to restore the balance! indeed, in many cases the organs usually vicarious to each other are involved in the infarction.

If the view that he had enunciated some six months ago was correct, we can thus readily explain some of those otherwise almost inexplicable cases of pyæmia where there is no wound, or its occurrence some time after a wound has soundly healed. Thus, let a fall produce an injury of any of the more superficial veins, such as a rupture of the internal coat, and of course a thrombus will form. This clot in the vein sets up an inflam-

mation in the surrounding tissues, the inflammatory products of which being absorbed, the clot extends into some larger vessel, portions are swept away in the blood-current, and we have pyæmia from the embolism of the various organs causing an *auto-infection*, if I may so term it, from non-elimination of excrementitious substances.

Dr. Nancrede thought it a great pity that the study of pathology usually ended with placing a section of the diseased organ under the microscope and merely trusting to the most obvious interpretation of the appearances observed. He thought that we should look at the physiology in connection with the microscopic appearances of a diseased organ.

Dr. Guitéras said the embolus did not have to follow any devious track, but went directly from the right heart through the pulmonary artery. In all cases of croupous pneumonia it is well known that there is a tendency to clot in the heart, and directly from this a fragment may be shot off and lodged in the lungs. Outside of this question he did not believe that this (case) had anything to do with pyæmia. It is well known that emboli are divided by all writers on the subject into *two* classes, specific and mechanical. The specific carry some special poisons or irritant properties through the action of which the pyæmic abscess is produced. But this has been a simple mechanical embolus, such as we find in heart-disease, producing congestion and rupture of the blood-vessels beyond it, —hemorrhagic infarction. In this case the infarction was followed by gangrene, which, though rare, is more common to the mechanical than to the specific emboli.

Dr. Nancrede said he had misunderstood Dr. Guitéras as to the source of the embolus, and, therefore, of course the first part of his remarks did not apply to the present case. He likewise was anxious to know on what authority the division into mechanical and infectious was made,—what grounds there were for believing there was a different cause producing these differing effects; as, unless proved by absolute demonstration, he thought we had no right to assume a specific cause.

If we examine the clot in a case of this kind, and one in pyæmia, he thought an explanation could be found without calling in the aid of any specific infection. In the present case we have a firm, hard, perfectly healthy mass of fibrin, not containing many cells proportionally, while in the pyæmic one we have a soft, friable, largely corpuscular clot, loaded with broken-down detritus, and eminently fitted to set up inflammatory trouble.

Dr. Guitéras said, further, that in the specific embolism the breaking down of the lung assumes the spherical shape characteristic of abscess, and

the mechanical is wedge-shaped, with the base towards the pleura. He referred Dr. Nancrede to Cohnheim's admirable exposition of the subject, found in vol. v. of Ziemssen's Cyclopædia of Practical Medicine. If further proof were needed, he called attention to the fact of this being but one infarctus, as contrasted with the plurality of metastatic abscesses.

December 14*th*, 1876.

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3. *Intra-thoracic cancer, involving pleura, diaphragm, and chest-walls.*

By Dr. William Pepper.

The case was under the care of Dr. Yarrow, with whom I had the pleasure of seeing it in consultation. The patient, aged 56 years, was in active business. He was free from any predisposition to cancerous disease. He had been subject for years to a bronchial cough. He saw Dr. Yarrow on May 10th, 1876, for a malarial trouble which lasted two weeks. He then convalesced, and was lost sight of for six weeks. Dr. Yarrow was then again called in to see him, and found evidence of marked effusion on the right side, which caused violent orthopnœa. The physical signs were localized chest-pain, absence of respiratory sound, and dulness on the right side. These signs gradually diminished, and in one month he was much better: there was return of resonance, diminution in pain, and much improvement in general health. During the whole period of his sickness there was marked disturbance of the liver, with a heavily-coated tongue, torpid bowels, and scanty urine. He commenced going out, and then there occurred a second effusion, causing dangerous orthopnœa. This occurred about the 10th to the 15th of September. There then appeared, for the first time, distinct prominences, with severe pain. The *first* prominence appeared over the ninth right rib posteriorly, four inches from the spine. The *second* appeared below the sternal end of the right clavicle; the *third* on the right side, in line of armpit, about the tenth rib. The signs of this last effusion never entirely disappeared, and there was no cessation of pain.

In the early part of October, when I first saw him, the symptoms were as follows. Great emaciation and profuse general sweating. (At the time of the first effusion the heart's action was frequent and irregular, continuing so until the close of the case.) There was no cachexia, but great pallor. Temperature not taken. The sweatings were so profuse as to require on some days that the clothing should be changed three times. This was not daily. It was at irregular periods. Sleep was disturbed by

the intense pain. This pain was constant, but also had paroxysms. It coincided chiefly with the prominences, but also extended down the nerves of the right arm. There was a severe dry cough. The pulse was frequent and feeble; right side of chest enlarged. Movement impaired, but not lost. Dulness irregularly distributed over it. Apex in front dull. Resonance down to about the fifth rib; not quite so low on side. Posteriorly, flatness from spine of scapula down. Respiratory sounds corresponded. Over dull area behind, feeble distant breathing, slightly bronchial. Over resonant areas, healthy murmur. Change of position produced no effect at all. A trocar was introduced through the eighth interspace posteriorly, about line of scapula. About one pint of clear serum was drawn off. Towards the close the fluid was nearly pure blood, and the canula was withdrawn. This afforded some relief, especially from the pain, but did not affect the physical signs, except that the murmur and vocal fremitus became more distinct behind. The heart was too far to the left. It was outside of the nipple. There was increased dulness there and along the sternum. No distention of the veins of face, neck, or right arm. Heart's action frequent and feeble; no murmurs. There was a second operation performed at the same point as the first, with no result.

The prominences increased. No further effusion existed. From this date to December 11th, 1876, about five weeks, he progressively failed in flesh and strength. There was great pain, which required large doses of morphia by mouth and hypodermically to relieve. The cough became worse. There were muco-purulent sputa. Slight œdema appeared, and death occurred.

At the *autopsy*, the chest and abdomen were examined. The left lung was healthy, but congested. The heart was pushed somewhat towards the left side. A large mass of morbid growth, resembling an encephaloid sarcoma, lay in the anterior mediastinum, attached to the posterior surface of sternum, and also to the outside of the pericardium. On opening the sac, there was about a gill of bloody serum, and both layers of the pericardium presented marked lesions of old inflammation. There was no disease of the valves. On the right side, corresponding with the prominences already described, were extensive cancerous masses. In the case of the one over the apex in front, the morbid growth also involved the intercostal tissues and the second and third ribs. The mass on the posterior surface was very large and extensive, and involved both layers of pleura, and also the superficial layer of lung-tissue at a few points. It reached from about the third rib down to near the diaphragm, and was

fully one inch thick in some places. The mass low down on the side was smaller, also involved both layers of pleura, and was continuous with a large growth which involved the whole thickness of the diaphragm. The anterior part of this muscle was chiefly affected; the growth in places was fully one-half to two inches in thickness, and the disease extended across to median line, where it was continuous with the mediastinal growth before described. At one spot over the convexity of liver there was an extension of cancerous disease to the capsule and superficial layer of the tissue of that organ.

There was no pleural effusion. The lung itself presented but a few comparatively small nodules of cancerous formation, and for the most part was crepitant. Along the posterior surface and at the apex it was intensely congested and œdematous. At the point of the first puncture there were pleural adhesions, showing that there had been no attempt to reproduce the effusion which was withdrawn by paracentesis.

The liver was enlarged, congested, and somewhat indurated and granular. With the exception of the small patch above described, there was no cancerous disease of its tissue.

The remaining abdominal organs were healthy.

The body presented only a moderate degree of emaciation, considerable amount of fat remaining, especially in the omentum and abdominal walls.

December 14*th*, 1876.

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4. *General tuberculosis of serous membranes.*

By Dr. P. E. Loder.

J. N., colored, æt. 26, single, nativity Philadelphia, occupation laborer, was admitted to the medical wards of the Philadelphia Hospital, November 2d, 1876. He has had chancres, but no history of any secondary symptoms.

When admitted he complained of shortness of breath and a slight cough. Pulse, 110 per minute; some fever, but the temperature was not recorded. Upon examination a slight effusion was found in both pleural cavities; belly very tympanitic, and a small amount of effusion in the peritoneal cavity. Feet and legs œdematous. Patient had great pain in the abdomen, which was not much increased on pressure.

Urine passed was much less than normal in quantity, highly colored, and albuminous, containing hyaline and granular tube-casts.

The patient was placed upon jaborandi and infusion of digitalis, which

seemed for a time to give some relief; but he soon grew worse, and died January 1st, 1877, during the service of Dr. Wilson.

The above history has been kindly furnished by Dr. Loder, resident physician in the hospital.

Autopsy, thirty-six hours after death.—Slight rigor mortis; body not well nourished; *brain* and its membranes normal; no tubercular deposit in the *lungs*. The *bronchial glands* were much enlarged, and some of them had undergone a caseous degeneration. There was an extensive tubercular deposit over the whole of both *pleural membranes*, being very much thickened. The *left pleural sac* contained two pints, and the right one pint, of a straw-colored fluid. There were also extensive adhesions on both sides.

The *liver* about normal in size.

The *spleen*, also normal in size, with a few points of deposit somewhat softened.

The *kidneys* were pale, and had the appearance of being fatty; the left contained a cyst about the size of a chestnut. The peritoneum was the seat of an extensive tubercular deposit, both on the visceral and parietal layer. The peritoneal sac contained eight pints of a straw-colored fluid.

There were strong adhesions, some of which formed complete sacs, the largest one being on the right side.

The parietal layer of the peritoneum was so strongly adherent to the internal organs that it was torn loose with difficulty, especially from the liver and spleen. The intestines were matted together, and the omentum very much thickened.

Dr. Fred. P. Henry asked whether there was any inflammatory focus which could have been the starting-point of infection of the tuberculosis.

Dr. Loder replied that the man had had syphilis, and that there was enlargement of the lymphatic glands of the neck.

Dr. Henry inquired as to the condition of the mesenteric glands, and alluded to a specimen of peritoneal tuberculosis which he had presented to the Society about two years ago. The patient from whom it was taken had died in a state of collapse from the effect of a most intense colliquative diarrhœa, utterly uncontrollable by remedies. The visceral peritoneum was "shagreened" with miliary tubercles, but the mucous membrane of the whole intestinal tract was perfectly healthy. The mesenteric glands were greatly enlarged, especially at the lumbar attachment of the mesentery, where several of them were united into a tumor of about six inches' circumference. At the time of presenting the specimen, Dr. H. had suggested as the cause of the diarrhœa a sympathetic nerve-paralysis due to

pressure by the glandular mass. This view is supported by the physiological experiments of Moreau, who found that section of this portion of the sympathetic was followed by profuse serous transudation into the intestine. In the case under consideration no mention is made of the condition of the mesenteric glands; presumably they were not enlarged; there was also no diarrhœa; which facts taken together furnish additional evidence in support of the theory of a paralyzing pressure as a cause of diarrhœa in these cases.

Dr. E. O. Shakespeare, under whose direction the autopsy was made, said no lesions of the cerebral membranes or of the pericardium were observed. The large caseous mass which was at first thought to be a cheesy degeneration of the proper lung-substance was on careful inspection found to be an enormously enlarged lymphatic gland which had undergone a cheesy metamorphosis. It was situated just within the root of the lung, and was attached to and partly enveloped one of the large bronchi.

There was also a very large mass of glands at the back of the trachea, much enlarged, and in a state of cheesy degeneration, which had probably existed for some time. The *thymus* gland at the anterior part of the trachea was also much enlarged, being one and a half to two inches in thickness. Dr. S. was not prepared to speak positively of the theory of caseous inoculation; but, if it be necessary to apply it to this case, it may be said that any one of these seats may have been the focus of infection, although it is hard to say whether the glands were first involved or whether the inflammation extended from the pleura to the peribronchial glands. It is very easy to conceive that the disease had its origin in the abdomen, either in enlarged mesenteric glands or the omentum itself, which was thickened and seems longest to have been affected with the inflammatory state. It is also very easy to imagine an extension of the pathological process by means of the lymphatic connection existing between the peritoneal and pleural cavity, between the pleural cavity and the peribronchial glands, and between the diaphragm and the glands in the anterior and posterior mediastinal space. The apparent limitation of the lesions to the structures in the course of this lymphatic circulation would seem to give some plausibility to this side of the question. *January* 11*th*, 1877.

5. *Peanut-shell from the trachea.*

By Dr. J. Solis Cohen.

One-half of a peanut-shell, $1\frac{3}{8}$ inch by $\frac{3}{8}$ inch, was inhaled into the trachea of a working-man, 25 years of age, on Christmas-day, 1875, and was coughed up, entire and uninjured, February 15th, 1876. During this period the patient had a good deal of cough, which was not supposed to have been due to the presence of a foreign body in the air-passage: indeed, the circumstance of the accident had been forgotten. He became considerably emaciated also, having lost forty-five pounds in weight.

After the spontaneous expulsion of the foreign body there was occasional cough and spitting of blood, especially after work (boiler-making) that required him to stoop. The patient was sent to Dr. Cohen (August 22d, 1876) by Dr. B. H. Detwiler, of Williamsport, Pa., for examination to see if any ulceration could be detected in the trachea, but there was only evidence of general congestion. Treatment appropriate to the restraint of hemorrhage and relief of cough was instituted, and on January 4th, 1877, Dr. Detwiler forwarded the specimen to Dr. Cohen, stating that the patient was well. *January 11th*, 1877.

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6. *Acute lobar pneumonia, beginning at right apex.*

By Dr. Frederick P. Henry.

O. C., æt. 34, was admitted to the Episcopal Hospital on March 5th. About one week before admission he had taken cold through exposure to wet while working at the coal wharves.

On admission he was very weak, although able to walk to his bed in the ward. I was going my round at the time, and examined him at once. I found dulness at the right apex, with loud blowing breathing and bronchophony, but could not detect any crepitation. The history of the case, and the man's appearance, which was quite robust, contradicted the idea of phthisis, which otherwise the physical signs might have suggested. The sputa, owning to the man's occupation, coal-heaving, were blackish.

The next morning the dulness and other signs of pneumonia referred to had extended very decidedly downwards: crepitation was also detected, although this sign was never prominent.

The inflammation gradually progressed downwards until all but the lower portion of the lowest lobe was involved. Notwithstanding the progression

of the inflammation, the man improved after admission, and continued to do so until the 11th, when he suddenly became worse. The temperature, which hitherto had been but little above the normal, now rose to 103° in the evening. There were low delirium and incontinence of urine and fæces.

On the 13th he seemed better, and was conscious: did not refuse food and medicine, as he had done the day before. Temperature 103°. Pulse 96, strong and full. Respiration 40.

From this time on he grew gradually worse until 2 A.M. of the 15th, when he died. The man's habits were intemperate.

The *lungs* and *heart* were the only organs that came under my inspection, and are now exhibited. The former present in a marked degree the condition known as anthracosis. The greater portion of the right lung is consolidated, but the stage of hepatization, whether red or gray, cannot be determined by the sense of sight, owing to the intense dark pigmentation.

One of the aortic leaflets is ruptured. The perforation is evidently recent, from the fact that the edges of the rent can be readily approximated. The heart was examined when the man was admitted, and no murmur detected. It is not unlikely that the rupture occurred on the 11th, when the symptoms suddenly became graver. *March 22d*, 1877.

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7. *Gangrene of the epiglottis.*

By Dr. Carl Seiler.

The patient, a man, presented himself at the infirmary of the German Hospital. Nearly one-half of the larynx had sloughed off in two weeks. The odor was so horrible that a laryngoscopic examination was almost impossible. The man was recommended to go to a general hospital, and has not been heard of since. *April 12th*, 1877.

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8. *Empyema; miliary tuberculosis; nodules in liver.*

By Dr. A. V. Meigs.

I wish to present to the Society some specimens which Dr. Starr and I removed from the body of a child a little over 3 years old. I hope at some time to publish a more extended account of this very interesting case. The child had been suffering with pyothorax, and at times

pneumo-pyothorax, for over a year. On April 17th, about four ounces of pus were drawn from the right pleural cavity by the aspirator, and again on the 27th about six ounces more. The day before the second operation a gaseous tumor of about the size of a hen's egg made its appearance upon the upper anterior surface of the chest. This occupied the position of the second costal cartilage, which was eroded for about an inch. The tumor receded and became more prominent with each respiratory movement, and its walls were very thin, the air (for at that time there was evidently pneumo-pyothorax) being very close under the finger. The tumor could be easily pushed in, and then the finger entered the chest, between the first and third ribs. On May 3d a drainage-tube was introduced into the cavity. It was passed in in the ninth interspace, and brought out in the sixth interspace. The operation was not easily done, because the ribs were pressed so closely together. There was a very large discharge of pus from the tube every day until the child died. For some time past the chest was washed out about twice a week with a solution of carbolic acid, f℥j to Oij of water.

The whole right pleural cavity was full of pus, and the lung pressed into a very small space in front. The sternum had sunk in so that there was not a space of more than about two inches between it and the spinal column. The edges of the ribs seemed to overlap the sternum somewhat, so great had been the falling in of the right side. The left lung was slightly emphysematous, and contained a great many miliary tubercles. The liver was fatty, and we found one small abscess and several hard yellow spots of about one-third the size of a pea. The kidneys were fatty. Heart healthy.

There was considerable necrosis of several of the ribs, particularly the ribs between which the drainage-tube passed. *June 28th*, 1877.

V.—THE GENITO-URINARY APPARATUS.

a. KIDNEYS AND BLADDER.

1. *Contracted kidneys; enlarged prostate; thickened bladder walls.*

By Dr. H. Lenox Hodge, for Dr. Lloyd.

W. C., an Englishman, aged 86 years, clerk by occupation, was admitted to the Presbyterian Hospital, December 7th, 1876. He was in an enfeebled condition, too weak to leave his bed. He was troubled with frequent urination, passing his urine in small quantities. Examination of his urine soon after admission gave this result: Specific gravity 1010. Slightly acid. No albumen or sugar. Light colored, with some deposit. He gradually became weaker, and died December 20th, 1876. During the last three or four days he was delirious. He had considerable fever during the last thirty-six hours, his temperature rising to 102$\frac{2}{5}$° about ten hours before his death. As death approached his temperature gradually diminished to 99°.

Post-mortem examination, thirty hours after death.—The right kidney found small and contracted, the left being larger, but irregular in outline. The pelves of both kidneys were filled with a fluid resembling pus. There was some urine in the bladder, which had a deposit resembling pus. The prostate gland found enlarged, and the walls of the bladder thickened.

December 28th, 1876.

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2. *Interstitial nephritis, in which there were marked retinal changes, pericarditis, and pericardial effusion.*

By Dr. James H. Hutchinson.

I should hardly have thought it worth while to bring these specimens before the Society, as they illustrate a very common form of kidney-disease, were it not for the fact that the ophthalmoscope enabled me to make a correct diagnosis in the case, some days before I became acquainted with any fact in the patient's history throwing any light upon the nature of the

disease from which he was suffering. The patient, who spoke nothing but Italian, a language I do not understand, presented, when first admitted to the Pennsylvania Hospital, the appearance of a man convalescent from typhoid fever. An examination of the urine revealed the fact that it contained both casts and albumen, but it would scarcely have been possible to say what particular form of Bright's disease was present, had not a careful examination of his eyes with the ophthalmoscope been made. There was nothing in his case to call particular attention to his eyes, and no doubt the marked retinal changes which were present would have been overlooked except that it is now my rule to use the ophthalmoscope in every case of albuminuria coming under my care at the hospital.

Before the patient had been many days in the ward, several attacks of epistaxis had occurred. These were so profuse that after the failure of ordinary styptic injections the nostrils were plugged both anteriorly and posteriorly. This tendency to epistaxis, indeed, was for some time the only unfavorable feature of his case, but its frequent occurrence, together with the retinal hemorrhages, gave me but little hope that there would be even a temporary improvement in his condition. The presence of a moderate amount of hypertrophy of the heart is not without interest, as it is to this condition that the retinal hemorrhages have been ascribed by some authorities. It was also present in the only other case of retinal hemorrhage accompanying Bright's disease in which I have had the opportunity of making a *post-mortem* examination. In both these cases pericarditis was set up towards the close of life, and in both, doubtless, was the proximate cause of death. In the case which forms the subject of this communication it was of very slight grade, and, although the præcordial region was frequently examined, escaped detection; nothing more than a very soft murmur, evidently of anæmic origin, being ever heard. This was probably due to the effusion present, which, although small in amount, was sufficient to keep the two surfaces of the pericardium apart.

The following history was obtained through an interpreter some days after the patient's admission:

B. B., æt. 25, single, sailor, Italian, admitted February 1st, 1877; died February 13th, 1877. Until the beginning of his present illness he does not remember ever having been sick, with the exception of an attack of gonorrhœa eight or nine years ago. He appears to have been formerly addicted to the use of alcohol in excess, but since he came to this country, two years ago, he has been temperate. For the last year he has had frequent and profuse hemorrhages from the nose, and for eight months has been obliged to rise at night to pass his water. He has only considered

himself seriously ill for the past two and a half months. Ten days before admission he noticed slight œdema of the legs, but has never had headache or dimness of vision.

Upon admission the patient was well nourished, but was mentally rather dull. Upon a close examination the legs and eyelids were found to be slightly œdematous. His tongue had a brownish coating at the base and at the sides, and was slightly fissured, so as to suggest the possibility of his having recently passed through an attack of typhoid fever, which view of his case was confirmed by the frequent occurrence of attacks of epistaxis, and by the presence of tympany and of sudamina.

Auscultation of the lungs revealed a few subcrepitant râles at base of chest, especially upon left side. A soft murmur was heard over the body of the heart, which was conveyed feebly both to base and to apex.

The urine was clear, pale, acid; specific gravity, 1010; no sugar; contained albumen one-fourth, and very large granular casts which seemed to be free from fat.

February 4th.—An ophthalmoscopic examination reveals a healthy disk with central excavation, the vessels being quite small. Striated appearance of retina, upon which were found, especially in the neighborhood of disk, numerous white patches, and hemorrhages both recent and old. About a quart of urine was passed in twenty-four hours.

In spite of iron in the form of the tincture of the chloride, and of the fluid extract of ergot, and of styptic injections, the bleeding from the nose continued, and it was necessary as a last resort to plug the nostrils. The patient, however, removed the plugs, whereupon the hemorrhage recurred, under which he sank early on the morning of February 13th. An examination made shortly before death showed that patient's urine contained, in addition to the casts before seen, numerous white and red blood-corpuscles.

The temperature of the patient while in the hospital never exceeded 99°, and was frequently as low as 97°.

Autopsy, by Dr. Morris Longstreth, thirty-two hours after death.—Rigor mortis marked; general surface of body pale; no fluid in subcutaneous connective tissue; no emaciation; small quantity of clear serum in abdomen; no evidences of inflammation. Serum and adhesions in both pleural cavities, especially marked at apices posteriorly. Pericardium contained sufficient serum to separate the two layers; serum cloudy, and contained flocculent lymph. Lymph was also adherent generally over surface of heart. Left heart firmly contracted, right heart relaxed. Right ventricle contained fluid blood, watery in character; right auricle contained a fibrinous clot. Left ventricle empty, its walls in contact; left auricle con-

tained a small chicken-fat clot. Weight, sixteen ounces. Valves normal. Left ventricle hypertrophied.

Lungs.—Right, very œdematous, exudes abundant frothy serum, slightly bloody. At right apex a puckering of the lung-tissue; beneath it a white nodule, size of a pea; on section showed a cheesy consistence in centre, surrounded by fibrous envelope. Upper part of lower lobe on section was deeply red, consistence lessened, surface of section not granular.

Left lung—congestion more marked; on section, serum the same in amount as on the other side, but more bloody; no softening; cut surface not granular. At left apex there was a similar nodule as at right; its centre, however, was not cheesy.

Spleen.—Weight, six ounces. Small, firm, adherent on outer surface; capsule thickened. On section, brownish-red. Presented a normal appearance.

Kidneys.—Left. Weight, three and a half ounces. Small, regular in outline. On section, tissues very pale, large vessels prominent and presented open calibres. Cortex very much reduced, was streaked, opaquely white; capsule thickened, tightly adherent, though it did not tear the tissue on removal. Surface of the kidney finely granular.

Right kidney. Weight, three and a half ounces. Cortex more reduced than that of left, and the tissue of organ was firmer, otherwise it presented very much the same appearance. Both kidneys had a urinous odor. Perinephritic connective tissue very œdematous.

Liver.—Weight, three pounds and six ounces. Adherent to diaphragm by bands of firm connective tissue. Outline irregular; color normal; tissue very firm.

Skull.—Calvaria normal; dura mater very pale; no subarachnoid effusion; vessels of pia mater only partially filled with blood. Nothing abnormal found in any part of the brain.

Eyes.—Both retinæ showed evidences of old and recent hemorrhages, more markedly in the right than in the left.

Dr. James Tyson said it was well known that retinal changes must frequently attend the cirrhotic form of chronic Bright's disease, but he had now under his care a case of chronic Bright's disease in the wards of the Philadelphia Hospital in which there are marked retinal changes, where there has been undoubtedly chronic catarrhal nephritis, although it is by no means impossible that there may now be secondary contraction of the organ, as the case is one of long duration.

Dr. Osgood said that Traube mentions having seen a case of the so-called amyloid degeneration of the kidneys complicated by retinitis, and quotes

cases published by Wagner and others. In his case Traube found hypertrophy of the left ventricle, and he not only asserts that there is no well-authenticated case on record in which retinitis co-attending amyloid or other disease of the kidney was not also accompanied by hypertrophy of the left ventricle, but insists that retinitis is essentially dependent upon the cardiac hypertrophy. Rosenstein, referring to Wagner's cases, remarks that in one of them there was no hypertrophy of the left ventricle. But Traube believes the latter condition was overlooked, because slight in development, and says that Schweigger accounts for the exception by expressing the opinion that retinitis did not exist in all of Wagner's cases, for at the time of Wagner's first publication the later ophthalmoscopical and anatomical discoveries in retinitis were not known. Traube further says that Von Graefe has also confirmed the existence of hypertrophy of the left ventricle, in all cases of retinitis attending nephritis which came under his notice, and that Von Graefe also saw cases of apoplexy of the retina (with formation of layers of fat) in which there was no affection of the kidneys, but always hypertrophy of the left ventricle.

Dr. Hutchinson did not wish to be understood as stating that these changes do not occur in other forms of Bright's disease, but as they are generally associated with the cirrhotic form, he thought that the use of the ophthalmoscope would often render the diagnosis much easier than it would otherwise be, as in the case reported by him this evening, where it had been made before any history could be obtained. He was aware, as had indeed been mentioned in his report, that the occurrence of the retinal changes was asserted by some observers to be a consequence of hypertrophy of the heart,—which is, as is well known, a frequent accompaniment of Bright's disease,—rather than of the Bright's disease itself; but it must not be forgotten that it is in the cirrhotic form that hypertrophy of the heart oftenest occurs.

Cases in which the retinal changes are marked are, however, Dr. H. went on to say, not often seen in the wards of a general hospital; they are more often met with at the clinics for diseases of the eye, the impairment of the vision caused by them being generally the most prominent symptom. Indeed, such is the insidious manner of approach of the cirrhotic form of Bright's disease, that it may be the only symptom which has attracted the patient's notice, as in a case which recently came under Dr. H.'s observation. The patient, an apparently healthy man of middle age, feeling perfectly well, scouted the idea of his being the subject of kidney-disease when it was suggested to him as possible. His urine, nevertheless, was found, upon examination, to contain albumen and casts, and he has

since died in uræmic convulsions. On the other hand, although Dr. H. has examined ophthalmoscopically the eyes of every patient with albuminuria in his wards for several years past, he has found the retinal changes in only a few instances.

Dr. J. T. Eskridge said that at the eye and ear clinic of the Philadelphia Dispensary a young lady had recently presented herself with marked retinitis albuminurica, easily recognized by all the assistants. On inquiry she said she had been treated for Bright's disease for three years.

Dr. Tyson remarked that occasionally we had an opposite result. A lad about 14 years old complained of his eyes, and consulted an eminent ophthalmologist of this city. The latter was struck with the condition of the eye-ground as that of retinitis albuminurica, and sent him to Dr. T. for an examination of his urine. The urine was examined, with negative results. Some weeks later a second examination was made, with a similar result. The boy continues well, and nearly two years have elapsed.

February 22d, 1877.

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3. *Large white kidneys accompanying phthisis.*

By Dr. Frederick P. Henry.

A. E., æt. 32, female, married, was admitted to the Episcopal Hospital on February 21st.

On admission the feet and legs and face were œdematous. The urine contained albumen, but no casts were detected at the only microscopic examination that was made. Soon after admission diarrhœa set in, and it was impossible to obtain another specimen of urine, as it was never passed separately. The catheter was not resorted to.

Examination of the lungs revealed the signs of extensive cavities of both apices.

The patient never complained, but insisted that she felt well, even at a time when it was evident she was dying. Her appetite was good. The pulse was remarkably slow, and continued so throughout, never, so far as is known, passing eighty—and usually nearer sixty—per minute. It ceased to beat some hours before death. There was at no time either delirium or coma,—in fact, no sign whatever of uræmic poisoning, unless the diarrhœa can be so considered.

At the *autopsy*, large cavities were found in the apices of both *lungs*,

and below these all the numerous appearances of chronic catarrhal pneumonia, such as slaty induration, collapse, œdema, etc.

The *liver* was slightly fatty. The *kidneys* weighed eight and a half and ten and a half ounces respectively, the right being the heavier. The cortical portion was increased in relative amount, and was of a pale yellow. The surface was streaked with arborescent vessels. The capsule peeled off readily for the most part, but in spots brought with it fragments of the friable glandular substance. The pyramids were bright red and very sharply defined.

It is, I think, still undecided whether this form of kidney is the result of catarrhal inflammation or is simply a fatty degeneration, and therefore the non-committal term "large white kidney" is most appropriate. Those who admit a primary fatty degeneration state that it is most frequently met with in pulmonary phthisis and in phosphorus-poisoning. This is explained by deficient oxidation of ingested fats, as well as those that are the result of tissue-metamorphosis, due to a diminution in number of the carriers of oxygen,—in the former case from "anæmia," in the latter from direct destruction of red corpuscles.

In anæmia there is also, besides the deficient oxidation, another cause active in the production of fatty metamorphosis, viz., an increased destruction of albumen. This has been shown by the experiments of Bauer.

The change known as fatty metamorphosis is held by many to be a separation of an amalgam-like combination between the albuminoid and the fatty elements of the cell: therefore any cause favoring destruction of albumen will also favor the fatty change.

In advanced phthisis both these causes of fatty degeneration are in operation.

The slow pulse is certainly a rare event in the history of phthisis. The absence of all signs of uræmia, other than the diarrhœa, and especially the preservation of consciousness up to the last moment, are also significant, and merit an attempt at explanation. It would seem as if there were a certain antagonism between phthisis and Bright's disease in some of its forms; and this I believe to be the case.

It is a commonly-held view that in Bright's disease it is not the urea retained in the blood that gives rise to the symptoms known as uræmic, but its conversion into carbonate of ammonium. Now, for this conversion certain additional equivalents of oxygen are demanded, and, if these are not supplied, uræmic symptoms may not be manifested. In extensive pulmonary disease oxygen is just the element that is most deficient, as evidenced by the above-mentioned fatty degenerations; and thus is

perhaps to be explained the antagonism between phthisis and Bright's disease.

Dr. John Guitéras asked Dr. Henry whether the induration of the lung to which he alluded was a marked feature,—whether, in a word, the case could be called one of fibroid phthisis.

Dr. Henry said that it was not.

Dr. Guitéras said he had asked because he had recently met two cases at the Philadelphia Hospital, in which Bright's disease of the kidneys had accompanied fibroid phthisis, and he had been led to look up the matter, and had found that fibroid phthisis was not infrequently attended by Bright's disease.

Dr. Guitéras agreed with Dr. Henry, that where these two diseases co-existed, and the affection of the lung became very active, the renal disease seemed to be partially in abeyance. In one of the cases under his observation the symptoms of the latter disease, which had pointed to the fatty organ, had so diminished that he thought the kidney had reached its third or contracting stage. The urine had increased in quantity, the albumen had diminished so that sometimes it was difficult to detect it, and the dropsy had disappeared. He died without uræmic symptoms. The kidney was the large fatty with commencing contraction.

Dr. James Tyson said it was well known that Bright's disease and phthisis are often associated, but he thought it was commonly supposed that the former was a sequel, and presented the albuminoid form of disease, consistently with the view now generally held, that albuminoid disease ensues upon exhaustive drains on the system, as those of tertiary syphilis or suppurating disease of bone from any cause, or from phthisis or even albuminuria itself.

Dr. James C. Wilson said he was reminded by the instance referred to by Dr. Guitéras of a case of chronic phthisis which had died under his care, at the age of 40. The patient, a man, suffered also from Bright's disease. His urine contained albumen with fatty and granular casts. When he first came under observation there were evidences of a cavity at the right apex, but the form of the disease was exceedingly chronic, the man being sufficiently well to do duty as an assistant in the ward, and presenting very few of the symptoms of phthisical or renal trouble. Dropsy was absent or nearly so; the quantity of albumen was slight, although easily recognizable. From the symptoms, Dr. Wilson was led to make the diagnosis of contracted kidney. Here also the tendency of the phthisis was towards contraction. A short time before his death the left lung became affected, a cavity formed, and he died within three or four weeks of

secondary miliary tuberculosis. At the *post-mortem* examination it was found that the form of disease was that of the fatty or fatty and contracting kidney. The organs presented the puckered appearance with local atrophy of the cortical substance with contracting and adherent capsule, whilst elsewhere the cortex was thickened and distinctly fatty.

Dr. Tyson said he had at this time under observation a gentleman, who had had phthisis for about five years, in whom there was also slight albuminuria with granular and hyaline casts, the conditions usually considered as pointing to the contracted kidney.

In answer to a question of Dr. Guitéras, Dr. T. said the symptoms in this case did not point to fibroid induration of the lung.

Dr. Wilson thought the presence of diarrhœa in Dr. Henry's case might account for the absence of terminal uræmic symptoms.

March 22d, 1877.

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4. *Cystic degeneration of the kidneys.*

By Dr. William Pepper.

The specimens were taken from a seaman, aged 27, of healthy parentage, who was admitted into the University Hospital, March 27th, 1877. Until thirty days before admission, he had never been ill, but for the past month he had been failing, being without appetite and growing steadily weaker, until five days before he entered the hospital, when he was compelled to give up work and go to bed. On admission, he appeared thin and anæmic, and complained only of general weakness and loss of appetite. His pulse was 120, respirations 26. He was ordered a milk diet and gr. x of pulv. ipecac. comp. During the night he vomited half a pint of yellow flaky matter, and had four evacuations from his bowels.

On the next day he seemed better, but in the afternoon vomiting returned, there was slight twitching of his hands, and, later, slight stupor supervened.

On the 29th the stupor increased, and there was vomiting, rapid breathing and pulse. By the 30th stupor was complete, pupils dilated, heart irregular and excited; he vomited at 3 P.M. In the evening, an involuntary evacuation of the bowels took place, stupor deepened, and temperature for the first time rose to $100\frac{2}{5}°$. The temperature was noted hourly after 7 P.M., and reached 102° at 10 P.M., after which it fell to between 95° and 96°, and continued until he died at 12.20 A.M. of the 31st.

The urine was examined once before death and found to be slightly albuminous, but no examination by the microscope was made.

Post-mortem examination.—*Thorax.* There were slight adhesions, but the lungs were healthy. There was slight concentric hypertrophy of the left ventricle. *Abdomen.* The abdominal organs were normal, except the kidneys, which are exhibited. They are enormously enlarged, and presented complete cystic degeneration.

Examination of urine removed from the bladder at the *post-mortem* by Dr. Tyson. It was evidently, but not highly, albuminous, sp. gr. 1016, and secondarily alkaline. *Microscopically* were found numerous leucocytes, crystals of triple phosphate, *fragments of uriniferous tubules*, together with partial and even entire Malpighian bodies, some of these with a considerable portion of uriniferous tubule attached.

Dr. James Tyson said that this was the second instance in which he had found fragments of the tubular structure of the kidney in the urine.

April 26th, 1877.

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5. *Tubercular (?) degeneration of the kidneys.*

By Dr. A. F. Müller, for Dr. William Darrach. Notes by Dr. R. W. Deaver.

P. H., æt. 52, Ireland, laborer, was admitted to the Germantown Hospital, May, 1877. He was very much emaciated, and immediately impressed one with the idea that he was suffering with phthisis; he stated that in less than a year his weight had fallen from one hundred and eighty to one hundred and ten pounds. He has not been perfectly well and free from pain for twenty years, though able to work until less than a year ago. He complained of pain in the lower part of the abdomen, and at the head of the penis there was some pouting of the meatus. This pain caused him to micturate frequently,—as often as every hour during the night, and oftener in daytime. He had some diarrhœa and considerable tenesmus. He never had passed any calculi, nor had there ever been any stoppage of his water. Examination of his lungs gave no sign of disease. Heart normal, except a slight hæmic murmur. He had passed per urethram pure blood, but mostly a heavy, grumous urine, resembling in color chocolate with cream, with a whitish deposit on standing. When he came into the house this was quite acid, but soon became alkaline. There was not more albumen than could be accounted for by the presence of blood. We never

succeeded in getting sufficient quantity to take the specific gravity, though this might easily have been done. He was put on diet of milk and beef-tea, brandy, f℥ss t. d., with pot. acet. and tr. gentian, and one-gr. opium suppositories at night.

The feebleness continued, and there was no amelioration of symptoms. His tongue was dry and coated, his pulse increased in frequency, and tr. opii camph., tr. bellad., ext. buchu fld. every three hours were ordered. Whilst using these his urine became clearer, and, though two days before his death, there was neither blood nor sediment: there was merely a trace of albumen. His general condition gradually became lower until May 30th, when he died.

Post-mortem examination, May 31st, 1877.—Appearance of body much emaciated. There was an absence of fat in and about all the organs and tissues.

Lungs, crepitant throughout; no cavities or appearance of tubercular deposit.

Heart, valves and muscular tissue in normal condition.

Kidneys—left, one-half normal size, enveloped in very little fat. A cyst made up one-half the organ; when laid open, an ounce of pus poured out.

The mass of the medullary portion of the organ appeared to be in a state of cheesy degeneration, as you meet in lung-tissue.

Right kidney one-third larger than normal, dark maroon color, external appearance normal. Upon being laid open, one or two cavities in a state of cheesy degeneration appeared. The membrane of the pelvis showed small tubercular bodies similar to those met with in tubercular meningitis.

Bladder, normal in appearance, except the mucous membrane near the mouth showed a few small bodies similar to those in the pelvis of the kidneys. The prostate gland was normal in size. Cavity of abdomen normal. Blood-vessels normal. The small bodies found in the mucous membrane of kidneys and bladder showed under the microscope small granular cells and granules, similar to those found in tubercular deposits in the lungs of phthisis.

The *urine*, which was albuminous, contained blood-corpuscles, granular cells, and granular matter. No tube-casts were observed.

Remarks by Dr. William Darrach.—The symptoms of the case were somewhat puzzling. The patient complained of frequent micturition, having to get up every hour, with pain at the head of the penis, pain in the back and under the shoulder-blade, also in the abdomen. He walked

to the hospital, and for a day or two sat about under the trees, as the weather was warm. In a short time he became weak, and went to bed. His tongue became dry, and pulse frequent. The symptoms were those of *stone*, while they also suggested aneurism of the aorta.

The clear normal appearance of the urine at one time, and at others the chocolate-color and whitish deposit, showed how easily mistakes might be made in the diagnosis. Drs. James Darrach, Downs, Lovejoy, and Deaver saw the case. Dr. J. Darrach suggested the idea of tubercular nephritis.

Dr. James Tyson remarked that it was impossible to say, from an examination of the specimens in their present condition, whether there were any tubercles or not. The large caseous collections, some of which were apparently breaking down and leaving large cavities or cysts, were, he thought, not tubercular, but inflammatory,—of the same nature as the products of a catarrhal pneumonia,—the area of caseous softening being extended by the pressure of the primary catarrhal product on the surrounding renal structure, whereby its nourishment was interfered with and it fell also into a state of caseous decay. If any tubercles were present, they should be found, as under similar circumstances in the lungs, at the periphery of the cheesy centres, having their origin in the infectious properties of the latter. True miliary tuberculosis of the kidney does, of course, occur, most commonly in children, as a part of a general tuberculosis. In this instance, judging from the apparent thickening of the walls of the bladder, and the apparently diminished size of its cavity, but without knowing whether there was pus in the urine, he was inclined to suppose that the catarrhal inflammation of the kidney was an extension by the ureter of an inflammation of the bladder. *June* 14*th*, 1877.

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b. FEMALE ORGANS OF GENERATION.

6. *Specimens (fœtal envelope, uterus, and ovaries) illustrating a case of extra-uterine pregnancy.*

By Dr. Frederick P. Henry.

My principal object in presenting these specimens is to obtain the opinion of the Society as to the nature of the fœtation which they represent.

I reserve the full clinical history, which would be here out of place, for

future publication, merely stating that the gestation proceeded to full term, that the diagnosis was accurately determined before death, and that the question of operation, after consultation with Dr. Goodell, was decided in the negative.

The specimens consist of the fœtal envelope, to the inner surface of which the placenta is adherent, the uterus, and the ovaries. It will be observed that the sac is attached to the right ovary, and perhaps also to the fimbriated extremity of the corresponding Fallopian tube, and upon the nature of this attachment turns the question between external ovarian or ovo-abdominal, tubo-ovarian, and abdominal pregnancy. If the connection is organized, the case is to be classified under one of the two former species; if simply inflammatory, under the latter.

That it is no easy matter to determine the exact nature of an extra-uterine pregnancy is forcibly stated in the following quotation from the admirable work upon the subject by the late Dr. Parry: "It should be borne in mind that, at the autopsy of a woman who has carried an extra-uterine child to or near term, it is often extremely difficult, nay, more, it is absolutely impossible, to determine the true seat of the pregnancy. Pressure and the other forces brought into operation by the ovum during its growth so change the relations and even the structure of the organs that it is impossible to determine the original seat of the ovum. The uterine appendages are frequently found so thinned and atrophied that their recognition is difficult or even impossible. This fact should be borne in mind, so that those who put their observations upon record may so accurately record the facts, that data may be gradually accumulated that will aid us in determining the comparative frequency of the species of misplaced gestations."

Whatever may be the nature of the fœtation, a very interesting pathological question is that concerning the existence of muscular fibres in the adventitious uterus. The specimen under the microscope is a transverse section of the fœtus-containing sac, and I think will be found to exhibit the organic muscular fibre. I speak thus hesitatingly, because I have in mind the great difficulties frequently attending the diagnosis between connective tissue and unstriped muscle. The resemblance between these two tissues being so great, other considerations than those founded upon the mere appearances are to be sought for in support of one or the other view. One of these is the arrangement of the cells and fibres. In connective tissues, of which tendon is the type, there will be found as a rule a regular arrangement of the cells and fibres. In making a transverse section these will be cut transversely. The specimen under the microscope is a trans-

verse section of the sac, and, therefore, if this were composed of connective tissue, we would expect to find the fibrillæ and cells cut transversely, whereas it will be seen the arrangement is by no means uniform, some of the cells being severed transversely, some obliquely, and others longitudinally, but by far the greater number in the latter direction. It is true that this regular arrangement of connective tissue is not without its exceptions, and, unfortunately for that portion of my argument founded upon the arrangement of the constituent parts, the ovary is an organ which presents one of the most marked deviations from the rule. I say unfortunately, because, it may be recalled, the sac is adherent to the right ovary, although it is not yet apparent whether the adhesion is inflammatory or organic. Waldeyer, in Stricker's Manual, says that in the ovary, beneath the albuginea, there is "a layer of compact connective tissue, also poor in cells, whose fibres show no special attempt at stratification, but run in every conceivable direction." On the other hand, His believes this layer of so-called connective tissue, and indeed the whole stroma of the ovary, to be composed of "stunted muscular tissue," to which he gives the name of "spindle tissue." In this individual case, therefore, it is impossible to decide upon the nature of this tissue by its arrangement. If the adhesion between the sac and ovary is vital, *i.e.*, organic, and therefore the sac a mere proliferation of the ovarian stroma, it is to be inferred that it would preserve the irregular arrangement of the parent cells, concerning the nature of which, however, authorities disagree. Whatever value, in a diagnostic point of view, the arrangement of the elements may possess in general, there is unfortunately nothing to be learned from it in the present instance until the nature of the attachment to the ovary is decided.

It will be observed that in and around the nucleus of many of the cells there are numerous oil-globules. These I regard as the first traces of involution, which is said to begin about the first week after delivery (Dalton). In the case under consideration, the full term had been passed by more than that time. It is possible that the behavior of these cells under polarized light might help to determine their nature.

The importance of the presence of muscular fibre in this sac, provided its adhesion to the ovary is decided to be inflammatory, is evident. In that case it would have to be regarded as a new formation, a metamorphosis of the cells of the fœtal membrane.

Leaving this interesting question, I would call attention to the uterus, which was enlarged to about double the normal size, was very vascular, and presented the remains of a decidua. The decidua was distinctly felt

by me on introducing my fingers into the uterus, and was broken up by the necessary examinations and discharged by the vagina.

In conclusion, I would remark that if this be decided to be a case of external ovarian or tubo-ovarian pregnancy, it is very unusual in such cases to find the ovaries and tubes so little involved. In this case their structure does not appear to be altered. It is my opinion that blood was conveyed to the placenta through the vessels of the right broad uterine ligament.

The ovaries have been preserved intact, and therefore the situation of the corpus luteum has not been determined.

Dr. James Tyson said he had carefully examined the section of the cyst-wall under the microscope, and had come to the conclusion that the large granular spindle cells there found were *not* unstriated muscular-fibre cells, but connective-tissue cells,—that is, such cells as we meet in what might be called the second stage of organization of inflammatory tissue, in which round cells have disappeared and spindle cells have replaced them, which in the third stage or stage of complete cicatricial tissue would be replaced by pure fibrillated connective tissue, by much of which indeed they are already accompanied. As to the state of incipient fatty degeneration to which Dr. Henry called attention, Dr. T. did not consider the granulation in the cells any more marked than is very often found in these large spindle cells of new formations.

Dr. C. B. Nancrede asked Dr. Tyson whether the tissue of the cyst was not too old to contain the comparatively young elements of lymph which these spindle cells represent, especially since the specimen was removed from that portion of the sac which must be considered the oldest.

Dr. Tyson thought not, as the new tissue might be said to be constantly forming.

Dr. H. Lenox Hodge asked whether the *post-mortem* examination showed whether an operation could have been performed with any prospect of success.

Dr. Henry replied that the *post-mortem* did prove that if the woman had been in proper condition to permit the operation, there would have been no difficulty in performing it.

Dr. Nancrede asked whether the *post-mortem* examination accounted in any way for the occurrence of the extra-uterine fœtation. When we examine the causes producing extra-uterine fœtation, at first sight it would seem a matter of wonder that it should not be an every-day occurrence. The only explanation of this seems to be the want of sufficient nourishment for the ovum in its abnormal situation. Thus, an ordinary catarrh

of the Fallopian tubes would probably so interfere with the ciliary movements by which the ovum is aided in its onward course, as to allow of its remaining in the tube. In some cases salpingitis results in a complete destruction of these ciliary cells. A more frequent and efficient cause is the adhesions resulting from an old perimetritis. These, by their contraction, cause stenosis, if not obliteration of the oviduct, in some cases permitting the passage of sperm, but not the ovum. Other causes might be mentioned, but the before-mentioned ones will suffice.

As confirmatory of these remarks, it is an interesting fact to note that these extra-uterine conceptions occur most frequently in primiparæ who have been barren for a long time after marriage, and in multiparæ between whose last pregnancies and the extra-uterine one a long time has intervened.

As to operation, it seemed to Dr. N. a great pity that something had not been done in this case. In some thirty-four cases that he had hurriedly collated, where the operation had been performed after the death of the fœtus, some thirty-one recovered, whereas when left to the unaided efforts of nature a much greater mortality obtained, something like fifty-two per cent. In the present case, an operation would confessedly have been an easy one. Where the placenta is left *in situ*, the number of successes would probably much exceed that before mentioned, since one of the greatest immediate risks of the operation is from hemorrhage caused by the removal of the placenta. When a rupture of the cyst occurs, and the diagnosis is clear, in view of the result of recent abdominal surgery, and the experience gained in ovariotomy as to the innocuousness of silk, and much more catgut peritoneal ligatures, he thought it the duty of the surgeon to perform gastrotomy in order to secure the bleeding vessels. He considered this a duty, because death in such cases was clearly traceable to hemorrhage and the shock produced by large amounts of blood in the peritoneal cavity. Besides, in such cases death is a *certainty*, while the operation offers a *chance* of success.

In those cases where the child is carried to term, and it dies, an operation is frequently successful. When suppuration has occurred, especially when an opening has formed in the abdominal walls by ulceration, the operation is almost always attended with favorable results. The longer, however, it can be delayed the better, provided the above results do not obtain; then, within the limits that ordinary surgical experience dictates, the sooner it is done the better. In illustration of the risks run by a patient who bears around with her an apparently innocuous fœtal cyst, Dr. N. related the case of a woman who had passed her full term by some eighteen months, and yet was brought to death's door by suppuration excited in the

cyst merely from the depressing influences exerted by grief. This woman, however, reduced apparently to the most unfavorable condition for operation, recovered on its performance. In the light of recent operations upon the healthy peritoneum, this operation ought not to be considered so desperately dangerous a one *per se*.

In four or five cases of abdominal section recently performed for intussusception of the bowel, where prolonged manipulation has been necessary, a surprising proportion of success has obtained. Other similar operations show how much less sensitive a healthy peritoneum is than most believe, although the puerperal state doubtless modifies this to a great extent.

In the case at present before the Society, no cause of death has been demonstrated beyond the shock from the death of the fœtus and its incipient decomposition, resulting probably in some form of blood-poisoning.

Dr. J. Ewing Mears alluded to a case in the practice of Dr. Atlee, in which the operation for removal of the fœtus was performed several months after the death of the latter. The remains of the fœtus and the fluid contained in the cyst were very offensive. The diagnosis was not accurately made, although the condition was suspected. The cyst was opened and its contents removed, the cyst washed out, and the patient recovered. He quite agreed with Dr. Nancrede, that more frequent efforts should be made to save the mother by operation.

Dr. M. desired to know whether the fœtus occupied a median or lateral position in the abdominal cavity.

Dr. Henry said the child's occiput occupied the left iliac fossa, and the trunk passed obliquely upwards and to the right. During life the vertebræ could be felt passing in this direction through the abdominal walls of the mother.

He thought the question of operation in this particular case had been discussed too much from an anatomical point of view and with insufficient clinical data. These, when given, might lead the advocates of operation to moderate their views. He knew that cases of recovery after operation had been reported where the patient's condition was apparently desperate, but in these cases accurate clinical histories and records of pulse and temperature were not given.

Dr. H. said that non-interference was decided upon on account of the woman's condition. She was suffering intensely, the uterus and surrounding parts were in a state of great irritation, she had a rapid thready pulse, was bathed in perspiration, in fact almost in a state of collapse and liable to sink at any moment; so that it seemed not unlikely that the operation would cause immediate death.

Dr. Nancrede referred to a report of one case in a recent number of the *Edinburgh Medical Journal*, where pulse- and temperature-records were given in full.

Dr. N. also alluded to certain apparently desperate cases of blood-poisoning following rupture of an ovarian cyst, its suppuration induced by any cause, or after ovariotomy, where the removal of the decomposing fluids, etc., has resulted in cure. Peaslee and Sims report cases where the most dangerous septicæmic symptoms were produced by an astonishingly small amount of septic fluids, in one case amounting to only a tablespoonful or so. When these were removed by drainages and washing out of the abdominal cavity by antiseptic fluids, all the evil results disappeared in a short time. This peritoneal drainage and antiseptic washing applied to the after-treatment of gastrotomy for extra-uterine pregnancy, would probably much lessen the risks of the operation.

Dr. E. O. Shakespeare said that, through the kindness of Dr. Henry, he had studied two sections of the cyst, the last one to-day. The appearances which struck him led him to agree entirely with the remarks of Dr. Tyson. The characters of the tissue are precisely like those he had seen in sections of the outer sheath of the optic nerve in cases of optic neuritis, where the sheath has been in a state of irritation for some time. This product presents of course a connective-tissue character. The appearances are similar also to those presented by the adventitious sheath of arteries after ligation. It is true, in this adventitious sheath we sometimes find unstriated muscular-fibre cells. But the great mass of the cells found in the inflamed adventitia must be looked upon as the progeny of connective-tissue corpuscles and the leucocytes rather than as the offspring of muscle cells. With respect to the section of this fœtal sac, the fact that the cells were found only singly in the meshes formed by the intercellular or connective-tissue fibres and elastic fibres, and along the course of the bundles of fibres, led him to believe that the tissue was fibrous in its character, resembling new fibrous tissue. The cells themselves did not present the typical characters of smooth muscular cells. The shape of the nucleus in unstriped muscular-fibre cells is generally rod-like, while the cells in this structure have oval nuclei, and many round. Nowhere could he satisfy himself that they were rod-shaped. As to the test by polarization, he thought the results must be entirely negative; he had not been able to find any statement as to the effect of polarized light upon the spindle-shaped cells of the connective tissue.

Dr. John Guitéras said that as some of the members seemed to think the cells were those of spindle-cell muscle, he thought the question should

be referred to the *Committee on Morbid Growths*, as he believed the existence of muscular tissue to be quite possible.

Only recently has attention been given to the regeneration of muscular structure, as also to that of nervous tissue. Until the investigations of Zenker, who found that after the degeneration of the sarcous element in fevers and other conditions the muscular fibre develops again from the nuclei under the sarcolemma,—until these investigations, the regeneration of muscular tissue was disbelieved. The present case might demonstrate the mode of formation of muscular tissue from embryonal formative cells or young connective-tissue cells.

Dr. Henry said undoubtedly there are no characteristic features by which the two kinds of cells could be distinguished. The question is whether it is possible to say where connective tissue begins and where muscular tissue ends; but no one attempts to answer it.

That it is difficult to distinguish the two is proved by the difference of opinion regarding the structure of the ovary between two such observers as His and Waldeyer, to which allusion has already been made in the paper introducing this discussion. The resemblance therefore being so great, if there is any force in the argument founded upon the arrangement of the constituent parts I think it should be received as final. On considering the connective and muscular (unstriated) tissues, it will be found, as a rule, that the cells and fibres of the former are parallel, while those of the latter are not so. In the uterus, for instance, there are three layers of muscle, the outer passing transversely across the fundus and continued along the Fallopian tubes, the middle running in every direction, longitudinally, transversely, and obliquely, while the inner is arranged in the form of two hollow cones whose apices surround the tubes, so that a transverse section of this organ will show fibres running in every conceivable direction. In the bladder there is an external longitudinal and an internal circular layer, also a band of oblique fibres arising behind the orifice of the ureter and inserted into the middle lobe of the prostate gland (the "muscle of the ureter" of Sir Charles Bell), so that a transverse section of the bladder at any point will exhibit fibres crossing at right angles, and a still more complicated arrangement if the section include the muscle of the ureter. The muscular coats of the stomach and intestine present similar arrangements. On the other hand, it is unnecessary to go into any detail in order to prove that connective tissue where composing an organ, as in tendon and cartilage, or arranged as a membrane, as in subcutaneous adipose tissue, is comparatively regular in its arrangement. On this ground alone—viz., the arrangement of the constituent parts—I would

accept the view of His as to the structure of the ovary in preference to that of Waldeyer.

Dr. Tyson remarked that in treating a question where the points of distinction were so few as between the cells under consideration and muscular-fibre cells, we must take into consideration the locality of the cell; just as in the case of the leucocyte we call it a colorless blood-corpuscle in the blood, a pus-corpuscle in pus, a lymph-corpuscle in lymph, and a mucus-corpuscle in mucus, so that here we have no reason to expect to find the elements of muscle, while we have every reason to expect the elements of inflammatory tissue.

Dr. Henry said he thought that gestation should not be overlooked. He thought the fact that a fœtus was contained in this sac would give an impulse in the direction of muscular tissue, and that we might therefore reasonably expect to find it.

Dr. Nancrede thought it very unsatisfactory to apply the *a priori* method of reasoning to microscopic investigation.

Dr. Tyson said, however that might be, it is nevertheless true that such method of treating the question as he suggested is sometimes necessary.

Dr. Shakespeare could not agree with Dr. Henry as to connective tissue. He did not think that tendon was to be considered a fair type of connective tissue as it is found throughout the body. He could not conceive of a more irregular arrangement of fibres than that which is present in the skin and intermuscular connective tissue.

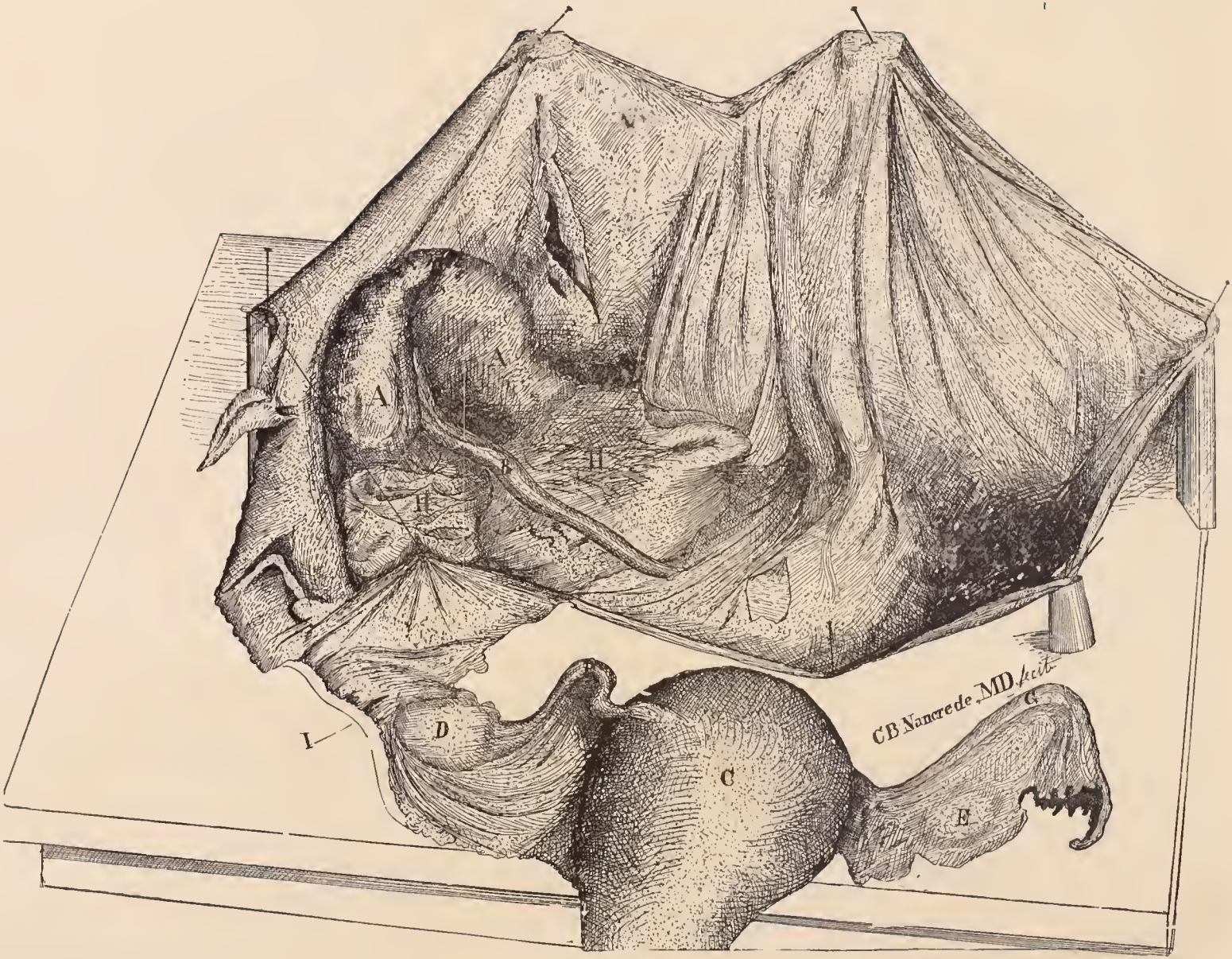
Dr. Henry thought that wherever connective tissue forms areolæ it possesses a universally irregular arrangement.

The specimen was referred to a special committee, consisting of Drs. Henry, Mears, Nancrede, Longstreth, and Shakespeare, for report and examination. *October* 12*th*, 1876.

Report of the special committee appointed to examine the extra-uterine pregnancy exhibited by Dr. F. P. Henry on October 12*th*, 1876.

"The committee appointed to examine the 'specimens illustrating an extra-uterine pregnancy' presented to the Society at a recent meeting, by Dr. F. P. Henry, submit the following report. The fœtation is of the abdominal variety, the ovule having escaped from the ovary so as to lodge upon the posterior layer of the broad ligament and there develop. The failure of the ovule to enter the Fallopian tube was apparently due to adhesions between the fimbriated extremity and the ovary. The sac was

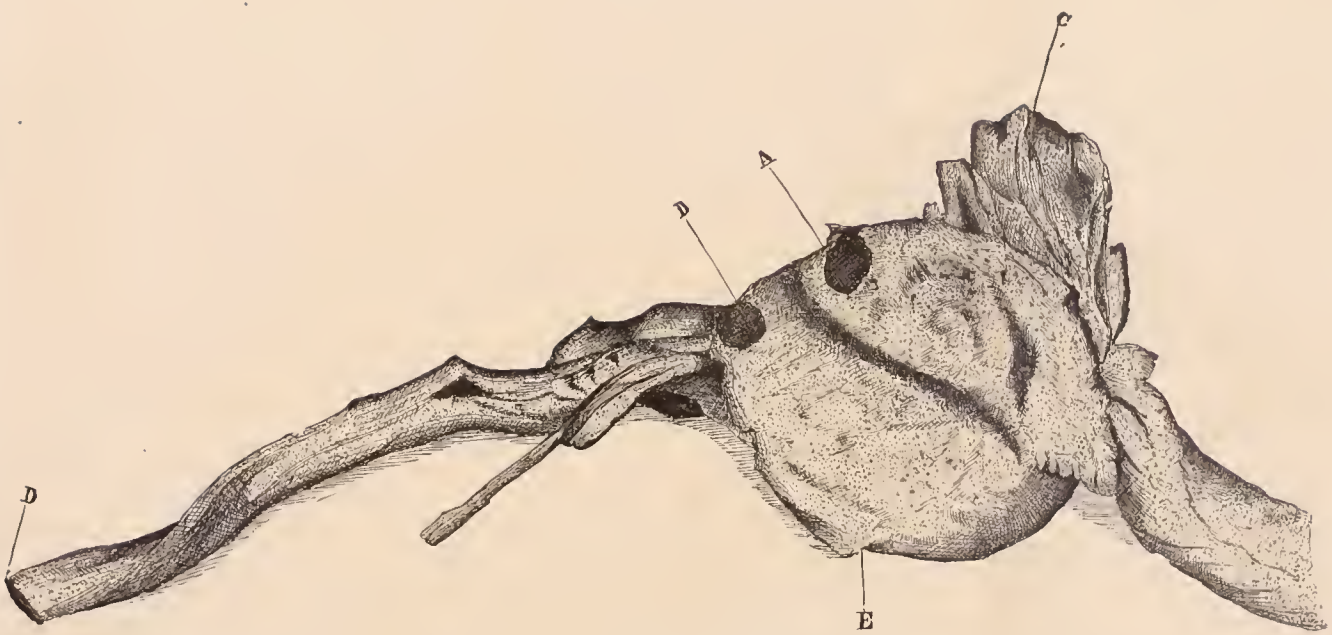
PLATE I.



EXPLANATION OF PLATE I.

A, Placenta.
B, Funis.
C, Uterus.
D, Right ovary.
E, Left ovary.
F, Right Fallopian tube.
G, Left Fallopian tube.
H, Membranes.
I, Line of incision made in removing broad ligament from pelvic walls.

PLATE II.



EXPLANATION OF PLATE II.

RIGHT OVARY OPENED FROM BEHIND; POSTERIOR HALF TURNED UPWARDS.

A, Superior half of corpus luteum.
B, Inferior half of corpus luteum.
C, Portion of broad ligament containing blood-vessels, traceable to placenta.
D, Right Fallopian tube.
E, Inferior border of ovary.

formed from the serous membrane by proliferation of its cells and exudation of fibrin, as in an ordinary adhesive inflammation of this tissue. The vessels developed in the pseudo-membrane have united with those of the broad ligament, from which the placenta was supplied with blood, as can now be readily demonstrated. The right ovary contains a well-marked corpus luteum, situated upon its inferior border and near the uterine extremity of the gland. The ovule, after escaping from the ovary, must have been moved to a position external to its point of escape, perhaps from some visceral motion which, owing to the adhesions mentioned, has not been antagonized by the normal serous current whose function it is to direct the ovule towards the fimbriated extremity of the tube. The adhesion may have been sufficient to cause the ovule to deviate from the normal course and yet have permitted the passage of the spermatic fluid; or, as experiments upon the lower animals allow us to conjecture, fecundation may have occurred through the opposite tube.

"The fimbriated extremity of the left tube was contracted so as barely to admit a No. 3 (French) catheter.

"A section of the broad ligament exhibits numerous large vascular lumina readily admitting an ordinary director, which can be pushed onward through the pedicle of the sac as far as the site of the placenta.

"The uterus is enlarged to about the size of the pregnant organ at three months; the cervix is elongated, and the coarsely granular mucous membrane shows decided traces of a decidua. The umbilical cord does not present the usual spiral appearance, which is probably due to the want of vascular injection. This may be brought forward as an additional argument that the fœtus was dead some time before the autopsy.

"In order to determine the structure of the sac, sections were made from different points of its circumference and examined microscopically. Those farthest removed from the pedicle were composed of connective tissue solely, while in one cut from the pedicle, about two inches from the ovary, spindle cells were observed which the committee were unable to distinguish from those of organic muscle.

"F. P. Henry,
"Morris Longstreth,
"E. O. Shakespeare,
"J. Ewing Mears,
"Chas. B. Nancrede."

Report of Dr. Shakespeare on the histological appearances.

"The small pieces of the fœtal sac which were referred to me for further minute examination included portions of tissue from the pedicle, portions from a position about an inch removed from the pedicle and to which the placenta had been attached, and portions from that part of the sac most remote from the pedicle. A slice from the uterine wall also accompanied the other pieces.

"The tissue from each of the above-named localities was variously treated: some macerated and teased, and some hardened and cut into thin sections. Sections were made horizontal to the surface, as well as sections in several directions perpendicular to that surface. A few sections of each were mounted, unstained, in balsam, for polariscopic examination; others were stained and mounted in glycerin or syrup.

"Stained sections of the portions most remote from the pedicle presented the following appearances:

"The vertical sections, no matter in what direction made, all showed similar pictures. The most of the ground-substance of these cuts consisted of long, slightly undulating, and nearly parallel bundles of fibrous tissue applied side to side so closely that the interfibrillar spaces, where they existed at all, were narrower and linear in shape. The only cellular appearance that could be discerned was solely confined to these spaces. The spaces were often completely filled with accumulations of cell-like bodies, all seen more or less in profile, and in this view mostly spindle-shaped, although not a few possessed circular outlines. Here and there in a field could be seen linear spaces not so crowded with these bodies. In these the cells were arranged end to end in two separate rows, a small very narrow free space existing between the two rows. On the fibrillar side, these rows of cell-like bodies were closely applied to the fibrous bundles. After the eye became familiar with this arrangement, the same general order could be traced without much difficulty in the previously mentioned more crowded spaces.

"The horizontal section showed, in points where the cut was extremely thin, the before-mentioned generally parallel course of fibrous bundles.

"Here, however, instead of the presence of the cell-like accumulations between each bundle, as before, they were often more prominent in spaces formed by the slight separation of wider fibrous bands, consisting of a number of the smaller bundles placed side by side. Moreover, the cell-like bodies were more heterogeneous in form, though they appeared in the

vertical section; many distinctly round or oval cells being observed, and the spindle outline being by no means so general.

"When a nucleus could be seen it was most frequently round or only slightly oval. No distinctly oval-shaped nucleus could be discovered, nor any oval one which decidedly approached the former shape.

"Thicker portions of these horizontal sections revealed an apparent lamellar arrangement of the fibrous bundles, with the direction of fibres in adjoining lamellæ at right angles to each other. The majority of the tissue was, in accordance with the suggestion, easily separated into thin plates. The appearance of the vertical section also supported the conclusion as to the lamellar arrangement. Large-sized capillary vessels, whose walls were in a state of irritation, were observed to course occasionally between the different lamellæ. The unstained sections, when placed between crossed Nichols prisms, were found to transmit light in the following portions. The fibrous bundles became luminous where their axes formed an angle with the axes of the prisms; the greatest intensity being reached when that angle became equal to 45°. In no position could the cells in the intercellular spaces be made to polarize.

"The conclusion arrived at respecting the nature of this portion of the sac, and strengthened by examination of teased portions, was that it presented the appearance of that form of irritated connective tissue of which the sclera may be considered a type, and that probably but few, if any, muscle cells were present in it.

"The same general description pretty well expresses the appearances found in the tissue of the sac one inch from the pedicle. The vessels were found in the same position relative to the lamellæ, but, instead of being capillary, arteries and veins of considerable size were numerous. Besides the cells previously described, there were many large spindle cells which it was impossible to say were not muscular. These were sometimes arranged in small bundles, but were most frequently isolated; their nuclei, however, when seen were oval. The sections from the pedicle exhibited in larger numbers the spindle cells last described, and showed less of the fibrous and more of the vascular structure than did the portions previously mentioned.

"The conclusion reached from these examinations may be stated as follows: that the great mass of the sac is to be considered as fibrous connective tissue; that in the pedicle and in that portion of the sac an inch removed from the former were also to be found muscle cells.

"E. O. Shakespeare."

November 23d, 1876.

7. *Extra-uterine pregnancy.*

By Dr. William Pepper.

Margaret M., æt. 53, married, a native of Ireland; has been in this country for twenty-seven years, and has been married twenty-four years. One year after her marriage she ceased menstruating, and noticed that her abdomen began to enlarge. She then told her friends that she was pregnant. But as time passed on to about (as she thought) five weeks before her time of being confined, she noticed that her abdomen began to grow less, and her friends wondered why she was not confined. During the three years following this time, she had two miscarriages, but at which month of gestation they occurred was not ascertained. She then had two living children; the one died three days after it was delivered, and the other is still living. After these living children were born, she had two more miscarriages, and the last one occurred about thirteen years ago. During all this time her health was comparatively good. About eighteen months ago she was admitted to the surgical wards of the Philadelphia Hospital with necrosis of the bones of the right foot. She remained in the surgical wards for eight months, and was then discharged to the out-wards. She remained in the out-wards until October 11th, 1876, at which time she was transferred to Dr. Pepper's on the medical floor. The woman was very weak and had intractable diarrhœa, with which she rapidly sank, and died on October 13th, 1876.

Post-mortem examination was made twelve hours after death, and the following conditions were found:

No rigor mortis; body not well nourished; the lungs and heart were quite healthy; the liver was slightly fatty; spleen normal in size; kidneys were fatty and somewhat contracted; the intestines were slightly congested, and lying over the superior strait of the pelvis was a hard tumor, which was quite movable, and was only attached to the omentum and to the right Fallopian tube; ovaries and uterus were quite normal.

She was living with her husband until eighteen months ago, when they were both admitted to the hospital.

The specimen was referred to a special committee consisting of Drs. F. P. Henry, J. E. Mears, C. B. Nancrede, Morris Longstreth, and E. O. Shakespeare, for examination and report.

Dr. Hodge asked Dr. Pepper whether there had been at any time simulated labor.

Dr. Pepper could not answer; he only knew that labor was looked for, but did not come on.

Dr. Hodge said that at about nine months there is generally a simulated labor, even in cases of abdominal pregnancy. So that if there was none in this case it belongs to a class of very rare cases.

October 26*th*, 1876.

Report of the committee on Dr. Wm. Pepper's case of extra-uterine pregnancy.

"*Anatomical description.*—As the parts stand in position, the tumor is on the right side. At the upper portion of the tumor is attached the omentum, having considerable fat in it.

"The peritoneum everywhere is smooth; in front is the bladder, normal internally and externally. At the lower portion of the specimen is found about one inch of the vaginal canal; its mucous membrane is normal. The os uteri is patulous, transverse, and admits the tip of the little finger. Later in the dissection, it was seen that the mucous membrane of the uterine cavity and of the neck was normal. Length of body of uterus, 3½–4 inches; width, 1½ inches.

"The left Fallopian tube seems elongated; its fimbriated extremity normal. Left tube seems to join body higher on the fundus uteri than usual. Left ovary of normal size; the ovarian surface shows cicatrices and what are apparently Graafian vesicles. Left broad ligament apparently normal.

"The tissues in the right broad ligament are thickened at its upper part and close to the body of the uterus. An incision was made on the anterior surface of this ligament, and by careful study of the outline of the uterus it was found that the uterine body was dragged, or rather rotated, in its lateral plane towards the right. On examining the interior of the uterine cavity, the opening of the right Fallopian tube is seen to be much lower down than that of the left side; the left one being at the highest part of the cavity.

"Commencing at the right fimbriated extremity, which is normal, the right Fallopian tube can be traced up to and upon the tumor (its under surface). Here an incision of the sac of the tumor had been made, previously to the specimen being handed to your committee for examination, in such a manner as to cut the right tube. It is impossible to trace the tube into the thickened tissue at the upper border of the right broad ligament between the tumor and the body of the uterus.

"The distance between the point where the right tube cannot be further traced and the uterus is about two inches.

"On the surface of the incision made on the anterior surface of the right broad ligament, as above mentioned, careful search was made for a right Fallopian tube, extending from the tumor (the point where it is lost) to the body of the uterus; but there was nothing present that could be identified as such a structure. The tissues here, made up partly of the sac of the tumor, at its point of contact with the upper margin of the right broad ligament, and partly of the continuation of the ligament to the body of the uterus, are so thickened and changed from normal conditions that the existence of a Fallopian tube (undiscovered) in them is quite supposable.

"On the surface of this incision is found an arterial vessel (containing reddish clot, in recent condition); through it a probe was passed; towards the uterus, the probe reaches as far as the body; in the opposite direction, the vessel branches, and through one of the largest branches the probe makes its appearance on the internal surface of the sac of the tumor in the midst of a raised portion of fibrous-looking tissue, to be described later.

"On attempting to pass a fine probe through the right tube, it is found to reach nearly (within one-third inch) to the sac of the tumor,—*i.e.*, nearly as far as the tube can be traced. In the portion of the sac of the tumor to the right of the incision made in it previous to the specimen coming into possession of your committee, is found what is considered to be a further portion of the right Fallopian tube, separated from the outer part of the tube by the cut; it is impossible to pass the probe through it. It is clear that the probe, passing along the right tube from the fimbriated extremity inwards, does not tend to enter the cavity of the sac of the tumor; the tube on its way to the right broad ligament passing rather under, or in front of, the wall of the sac. It is also impossible to pass the probe to any distance into the right Fallopian tube from the uterine cavity.

"A probe passes along the left Fallopian tube from the right fimbriated extremity to within half an inch of the uterus, but cannot be made to enter its cavity; neither can a probe be made to enter the uterine orifice of the left tube.

"The right ovary appears the same as the left; the point of contact of the tumor with the right broad ligament is inwards (*i.e.*, nearer uterus) from this ovary.

"No section was made of either ovary.

"The tumor is said to have rested on the right anterior brim of the pelvis; and it is evident, from the condition of the specimen, that it has not been making pressure on the pelvic organs.

"Its surface is everywhere smooth and shining, except at parts where the omentum is attached.

"The mass is irregularly rectangular, flattened at the sides, especially at the superior part; the inferior part is rounded, convex in both directions; at the posterior part the outline slopes upward and backward (cutting off the posterior inferior angle of rectangular figure); the anterior surface is flatter, though slightly convex from side to side, smooth at the inferior portion, and roughened at the superior, especially in the median line; the superior lateral portions are slightly rounded, and the width of this surface is less here than below. At the superior anterior border the omentum is attached, and thence, also, along the superior surface. The superior surface is narrower than the inferior; in its median line is a low ridge, made up of more or less regularly placed small prominences (processes of vertebræ).

"The posterior border terminates in an angular-shaped prominence, rounded at its end and slightly curved downward.

"The prominences on the surface of the tumor—of which there are many—are in general placed symmetrically.

"The sac of the tumor has been opened, as above mentioned, by an incision along the inferior surface,—its thickest and densest part. The sac has been peeled off over a considerable portion of the tumor; its thickness, as far as examined, varies very considerably at different parts—from an excessive tenuity, rendering dissection impossible, to about one line in thickness, at the line of incision.

"On the inner surface of the sac, near the point of contact of the sac with the upper border of the right broad ligament, is a raised portion of fibrous-looking tissue, above mentioned. Here it is that the only distinct vascular trunk is found, coming along the broad ligament and branching in the fibrous-looking tissue. This tissue presents a radiating surface appearance, thickest in the middle (remains of placenta). This surface had been separated from the tumor before our examination. There is found no structure proceeding from it, or attached to it, that could be identified as the umbilical cord. No trace of the umbilical cord was found during later examination; its abdominal attachment being covered by the folded head and extremities. No attempt was made to remove these structures.

"The line of incision of the sac is found to correspond to the sagittal suture of the fœtal head; the suture is slightly overlapped by the left parietal bone. The anterior surface of the tumor is made up of the occipital bone, the neck, and the back as far as the upper dorsal region; the shoulders and scapulæ are at the superior anterior angles of rectangle.

At this border, the spine is bent at right angles, and the dorsum, as far as the sacrum and coccyx, forms the superior surface of the tumor. The posterior surface extends from the point of the coccyx to the fœtal forehead; on this surface are arranged the lower extremities, which can be only partially traced.

"On the right side of the frontal bone, parallel to the coronal suture, is placed the right hand; the wrist is at the anterior inferior parietal angle; the tips of the fingers reach the median line of the frontal bone.

"The left hand, partially closed, is placed on the left parietal bone, in advance of its protuberance; the left wrist is dislocated; the carpal ends of the bones of the forearm are projecting.

"The arms are placed at the sides of the trunk; the forearms of both sides are flexed at an acute angle on the arms, the left the most so. The bones of both superior extremities are to be well traced; those of the right forearm are least distinct, however.

"The right femur is placed obliquely on the posterior surface, running obliquely downward and to the right, from the point of the coccyx; its head and neck contribute, with the coccyx, to making up the rounded termination of the angular-shaped prominence at the posterior end of the superior surface. The right leg can be traced running across the forehead, downward, forward, and to the left; the ankle resting to the left side of the anterior fontanelle; the knee being close to the right wrist; the foot cannot be distinctly traced.

"Behind and slightly above the right leg, on the posterior surface of the tumor, and exactly in the median line, is a prominence, evidently the condyles of the left femur. The head of the left femur is apparently in articulation with the pelvis.

"*Measurements.*—Bi-parietal, width $3\frac{1}{8}$ inches.

"Antero-posterior diameter of mass (greatest), $4\frac{5}{8}$ inches.

"Vertex to bend of spine in dorsal region, $4\frac{3}{8}$ inches.

"From dorsal bend to point of coccyx, $4\frac{5}{8}$ inches.

"Left humerus, length 2 inches.

"Right humerus, length $2\frac{1}{4}$ inches.

"Left forearm, length $1\frac{3}{4}$ inches.

"Right femur, length $2\frac{1}{2}$ inches.

"On the inner side of the tumor (*i.e.*, the left side of the fœtus), at the superior anterior angle is a prominence not present on the opposite side. This prominence commences $\frac{3}{4}$ inch from the median line of the dorsum, extending downward and slightly backward, reaching nearly to the middle of the shaft of the left humerus; in front of the prominence is the left

scapula and shoulder-joint. The prominence measures 1½ inches long, by perhaps 1 inch broad; the surface-projection is low and flattened.

"The interest which this prominence possesses was first noticed by Dr. Nancrede whilst making the drawing. The drying of its surface made its nature apparent. It is another fœtus.

"At its upper and back part are seen the spinous processes, etc., of its vertebræ; running from thence, forward and downward, are ribs. The second fœtus's head, therefore, is placed behind the shaft of the left humerus. The head has been much flattened, and its bones separated and displaced. The sacrum is directed upward and forward, reaching nearly to the inferior angle of the scapula, near the point where the vertebral column of the large fœtus makes a sharp bend in the dorsal region.

"The vertebræ and ribs are most distinctly recognized; the bones of the arm and forearm of one side are somewhat less easily traceable. It was possible to make out only indefinitely other osseous parts; for example, the head and sacral portions.

"The second fœtus was carefully examined to determine its connection with the large fœtus. The sac of the tumor evidently encloses both products of conception. The examination was continued by making an incision of the sac around the periphery of the small fœtus; after which it was raised up and the parts below the second fœtus, where it rests on the large fœtus, examined.

"There is between them considerable cellular tissue, partly dense and fibrous. It is impossible to speak with certainty of the positive existence of a sac-wall separating the two. The sac which has been described as enclosing the large fœtus was certainly continuous directly over the second fœtus, and it showed no distinct prolongation inwards between the two. The presence of cellular tissue between the two structures is readily to be accounted for in the changes undergone by the integuments of the large fœtus.

"No special examination was made to determine the extent of ossification of the bony parts. It was evident, however, that a considerable amount of calcareous matter was present in all the bony structures near the periphery of the tumor. The whole mass was exceedingly rigid; movement or indentation by pressure was to a great degree impossible.

"It is further to be noted that, after removal of the sac of the tumor (at least, so far as this was done), there was presented an appearance of a second inner membrane, smooth on the surface, although having fibro-cellular attachments to the outer sac. Effort was made to dissect away this *inner* smooth covering, but it failed; the membrane, so called, being continuous with the subjacent structures of the large fœtus.

"The effect of this inner membrane and its subjacent tissues was to fill the interstices naturally present between the fœtal trunk and the head and the folded extremities.

"In the tissues subjacent to this inner membrane were found calcareous particles and masses of regular form. This calcareous tissue was something apart from bones or their fragments.

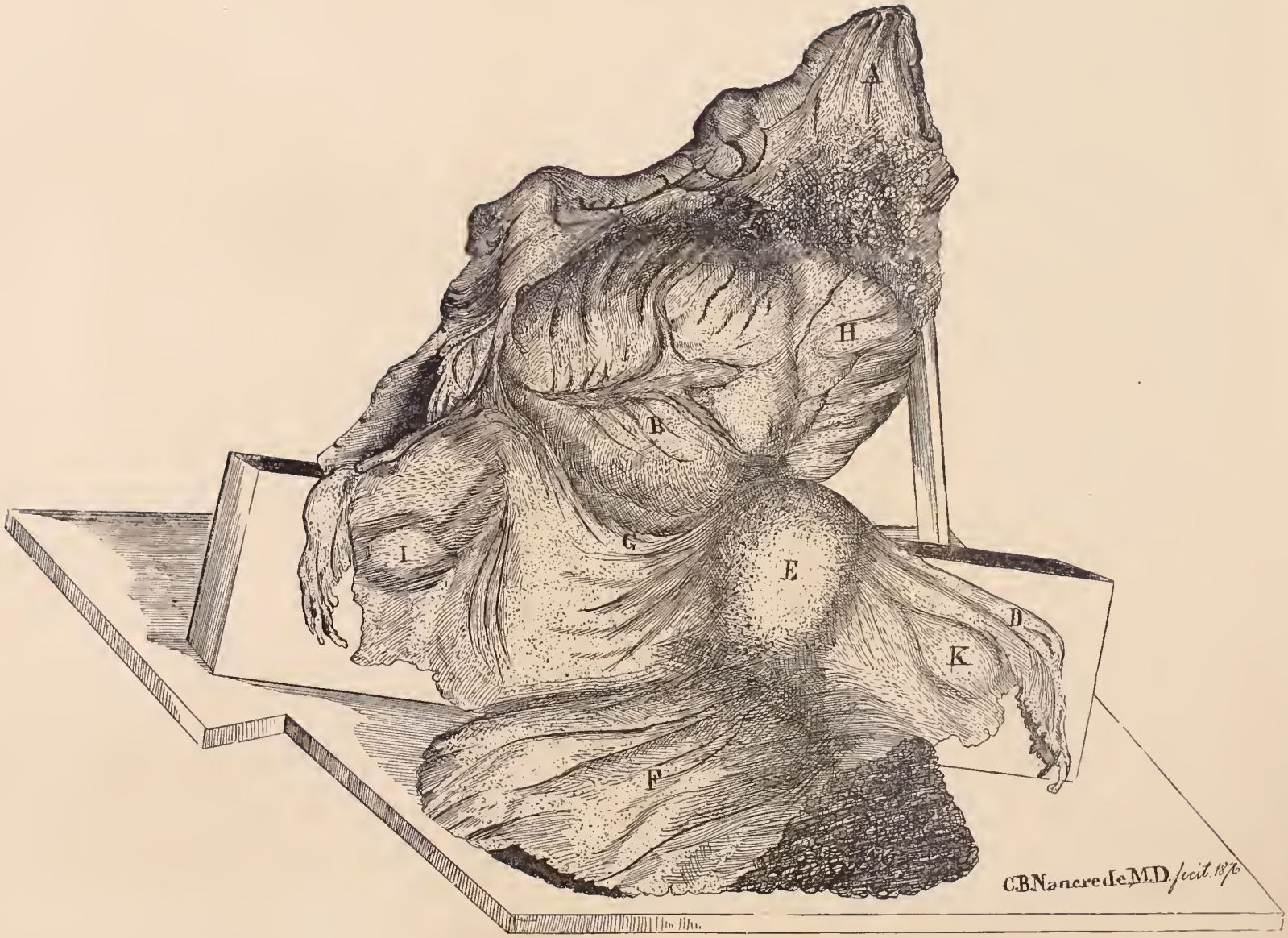
"As to the nature of the pregnancy, the committee are of the opinion that it is abdominal, originating upon the posterior layer of the right broad ligament. They are led to this opinion chiefly by the small section of tube involved in the growth, and the decided thinning of the middle and lower portion of the broad ligament, due to traction upon its posterior layer during the growth of the fœtus, and to a similar traction from its propulsion upwards by the pregnant womb in the subsequent normal gestations. Finally, there is no history of rupture.

"It is hardly to be supposed that a Fallopian pregnancy could proceed to full term without involving more than two inches of tube. It is doubtful also whether it can justly be said that two inches of the right tube remain to be accounted for, since, as may be recalled, it is stated in the anatomical description that the left tube, with which it, of course, was compared, was elongated. The right tube is traceable up to and *upon* the under surface of the tumor, where it becomes suddenly lost, probably atrophied from pressure; there is no gradual dilatation in the direction of the tumor. The portion of the tube not traceable is also closely external to the placental site, where the maximum pressure would be exerted, and where also the greatest vascularity would exist, both of which conditions are the most favorable possible for the production of atrophy. Cases of twin extra-uterine pregnancy are decidedly rare. Among the five hundred cases analyzed by Parry it occurred but three times, and one of these cases he considered doubtful. On the other hand, twin pregnancies in which one fœtus is intra-, the other extra-, uterine, constitute so large a proportion of the cases of extra-uterine pregnancy that twin gestation has been reckoned among the causes of that condition.

"Considering how nearly the second fœtus escaped attention, it is permissible to suspect that similar cases may have been frequently overlooked.

"J. Ewing Mears,
"Morris Longstreth,
"C. B. Nancrede,
"E. Shakespeare,
"P. E. Loder,
"F. P. Henry, *Chairman.*"

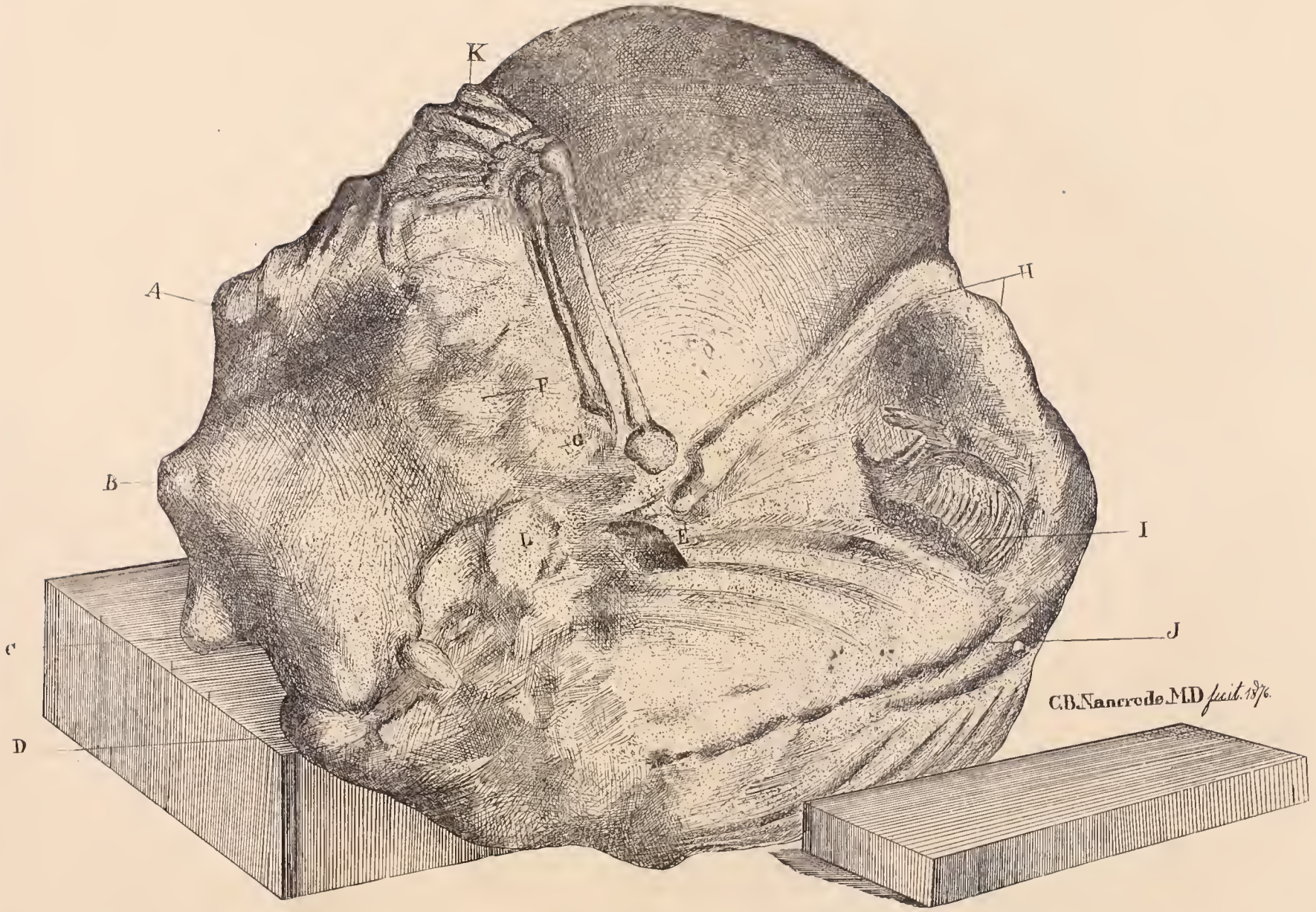
PLATE III.



EXPLANATION OF PLATE III.

A, Adherent omentum.
B, Fœtal head.
C, Right Fallopian tube.
D, Left Fallopian tube.
E, Uterus.
F, Bladder.
G, Uterine extremity of right Fallopian tube.
H, Body of fœtus.
I, Right ovary.
K, Left ovary.

PLATE IV.



EXPLANATION OF PLATE IV.

A, Malleoli of right leg.
B, Condyles of left femur.
C, Luxated head of left tibia.
D, Trochanter major of right femur.
E, Crest of left ilium.
F, Left leg (head of left femur).
G, Small detached bones of left tarsus.
H, Left humerus articulating with scapula, which is indicated by the perpendicular line.
I, Second fœtus.
J, Spinous processes of vertebræ, with thoracic walls on each side, as shown by ribs.
K, Left hand, with carpus, metacarpus, and fore-arm bones still articulated.
L, Tarsus of left lower extremity.

8. *Cancer of the vagina, fibroid tumors of the uterus, and secondary cancer of the lungs and liver.*

By Dr. W. H. Warder.

H. C., colored, æt. 50, occupation domestic; entered the Philadelphia Hospital October 19th, 1875. She had never had any children. She always suffered more or less pain at the menstrual period, and for the last five or six years the dysmenorrhœa had greatly increased, and was attended by menorrhagia.

Two years before entering the hospital she noticed a hard lump in the lower portion of the abdomen, which she attributed to a strain from lifting a heavy tub of clothes. From this time she had suffered with more or less pain in the pelvic region, irritability of the bladder, constipation or diarrhœa. At the time of entering the hospital there was more or less discharge from the vagina of a thin, watery character, irritating the external parts and somewhat offensive. Up to this time there had been no metrorrhagia.

Soon after this she said her sickness became very irregular, and she hardly knew when she was unwell. Six months after she entered the hospital the case came under my observation. Upon a careful physical examination, I found the vagina greatly contracted and full of soft granular masses of a papillary character, and bleeding freely upon the passage of the finger to the cervix uteri. The cervix could be easily detected, and was movable and but slightly hardened. By bi-manual palpation I found the uterus very much enlarged, with nodular masses upon its external surface. By simple palpation I could easily detect the tumor above the superior strait, reaching a point almost midway between the umbilicus and the symphysis pubis. The tumor was movable in the abdominal cavity.

The woman was comparatively well nourished, but complained of general debility and loss of appetite.

Up to this time there had been no very severe hemorrhage. She did not complain of any special pain in the thorax or in the region of the liver. There was no difficulty in respiration, and the heart's action was normal. I diagnosed the case at the time as epithelioma of the vagina and fibroid tumors of the uterus.

During the last six months, the case has not been under my observation. Dr. Moffet, resident physician, Philadelphia Hospital, very kindly furnished me the following notes of the case during that time. "Has complained of a good deal of pain of sharp lancinating or burning character in the

lower portion of the pelvis. More or less hemorrhage, and offensive discharge. During the last two months complained of great difficulty in respiration, with all the symptoms of œdema of the lungs. A weak, small, and irregular pulse. The difficult respiration was greatly relieved by doses of 10 gr. carb. ammon. and 15 drops tincture digitalis. There was no special pain in the region of the liver. She died October 1st, 1876."

Post-mortem examination.—Lungs filled with secondary cancerous deposits; spleen normal; the liver contained brain-like deposits very generally through it; kidneys normal; uterus showed subserous, interstitial, and submucous fibroids; one large tumor attached to the fundus externally had a cystic character; vagina very much contracted, the walls hard and indurated, filled with papillary growths of a jelly-like consistence. These extended up to the cervix uteri, slightly involving the same; bladder normal; rectum normal.

Dr. J. Ewing Mears said with regard to the occurrence of primary cancer of the vagina, although rare, two cases had been presented to this Society within a comparatively short period of time, in each of which an operation was performed, one by Dr. Parry and another by himself. In both cases the uterus was not involved. Dr. M. also thought that probably primary cancer of the vagina would not be found so rare could the cases involving vagina and uterus be sufficiently early examined,—that is, before the disease had extended to the uterus, which may not always be the place of beginning in these cases.

Dr. Ashhurst said that primary cancer of the vagina was undoubtedly a rare affection. He had himself seen but one case, in a patient supposed to be suffering from hernia, but who, on examination, was found to have cancer of the vagina, with secondary implication of an inguinal lymphatic gland. Vaginal cancer spreading either upwards from the vulva or downwards from the uterus was, however, comparatively common.

Dr. Warder said that at the first examination there was no involvement of the vulva, and he did not come in contact with the mass in the vagina until the orifice had been passed half an inch. The diagnosis was made from the general characters rather than a minute examination, among which was the peculiar smell; for, although an examination of the papillary growth was made by the resident physician, nothing characteristic was discovered. *October 26th*, 1876.

Report of the Committee on Morbid Growths:

"Your committee have examined the tumors presented by Dr. Warder, and beg leave to report that the growth upon and in the walls of the

vagina is *carcinoma gelatinosa*. At only a few points can any remains of the cells undergoing colloid degeneration be found."

November 9th, 1876.

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9. *Fluid from abdominal cysts.*

By Dr. H. Lenox Hodge.

One was taken from a unilocular cyst containing nineteen pints. The fluid in small quantity had the appearance of ordinary water. In bulk there was a very light straw color to it. Its specific gravity was 1007. It does not contain albumen.

The other was taken from one large cyst of a multilocular tumor. This cyst contained thirty-four pints of fluid. It is almost as colorless as water, and as it ran from the canula during the tapping had very much the appearance of starch-water. Its specific gravity was 1008. It does not contain albumen. The other cysts of the tumor were not tapped. Some of them are filled with very thick semi-solid contents.

The microscopical examination of these fluids will be very interesting, as both of the cases will possibly sooner or later require the operation of extirpation. The presence or absence of the so-called "ovarian cell" as a diagnostic sign can thus be tested by members of the Society.

The specimens were referred to the special committee on ovarian fluids.

December 14th, 1876.

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10. *Cystic disease of broad ligament, ovary, and fibrous tumors of the uterus.*

By Dr. H. Lenox Hodge.

The patient from whom these tumors were removed was 46 years old, and had suffered from them for three years. She was first tapped in March, 1876. Since then she has been tapped many times, and the cysts once injected with iodine; but ovariotomy was not done, on account of extreme prostration since she came under my care. The fluid removed looked like starch-water, had a specific gravity of about 1008, and contained little or no albumen. Microscopical examinations of the fluid have been made by Dr. Tyson and by Dr. Richardson, who will report the result of their examination. Fluid from these cysts was exhibited to the Society several weeks ago, and its peculiarities commented upon.

Both ovaries were enlarged. The left was bound down by adhesions behind the uterus, and presented hemorrhagic marks upon its surface. The patient had expected her menses about three weeks before her death; but they did not appear.

The right ovary was about as large as a walnut, and contained a thick grumous substance of a brown color.

The mass of the tumor sprung from the right broad ligament and was distinct from the ovary. The mass consisted of two large cysts filled with fluid described as above, mingled, since the iodine injection, with some pus. These cysts contained in their walls several smaller cysts with semi-solid contents. The tumor on its anterior surface was firmly adherent to the abdominal walls.

The uterus was enlarged about three times its natural size, and contained a number of subperitoneal fibroid tumors, and a small polypus projecting from the external os. This accounts for the tendency to menorrhagia which existed, and is unusual in uncomplicated ovarian tumors.

The liver was found pressed up high in the thorax, its upper surface reaching above the nipple to the fourth rib.

The rest of the abdominal organs were normal, except that the stomach and large intestines were distended with gas.

Dr. James Tyson said he had examined some of the fluid microscopically, at the request of Dr. Hodge, and had found large numbers of the small granular cells,—the so-called "ovarian cells."

Dr. J. Ewing Mears said that he thought the portion opened as the ovary before the Society was really a cyst—an exogenous cyst. The tumor consists of endogenous and exogenous growths, the latter being upon the periphery and sometimes rupturing into the peritoneal cavity. They are filled with the same fluid as the endogenous cysts.

Dr. Hodge said that this was his own opinion prior to the *post-mortem* examination, which corroborated the diagnosis in all other respects. Before death, a small rounded tumor was felt above Poupart's ligament of the right side. This was believed to be an exogenous growth from the main tumor. The patient herself said it was the ovary, and it seemed sensitive to pressure. Upon the *post-mortem* examination it was found to hang like the ovary from the posterior surface of the broad ligament, and bore the usual relation of the ovary to the Fallopian tube. In the opinion of all present at the examination, it was the ovary which had become cystic, and that the chief tumor came from the broad ligament.

Since the examination the specimen has lost much of its original appearance, especially by the collapse of this small cyst. This case is interesting

not only in reference to the so-called ovarian cell, but also in reference to the presence of albumen in these cystic tumors. The fluid obtained by the numerous tappings contained no albumen, except at the last tappings, and then only in small quantities. This I have observed in other cases, even in a more marked degree,—a tumor which at first possessed all the characteristics of a tumor of the broad ligament, monocystic, containing a very thin fluid, of low specific gravity, clear as spring-water, and without albumen; such fluid returning after tapping, with the characteristics of an ovarian fluid, being thick, of high specific gravity, dark color, and loaded with albumen, thus suggesting that the disease has extended from the broad ligament to the ovary. This may have occurred in this case.

December 14*th*, 1876.

The specimen was referred to the committee on the "ovarian cell," with a view to determining the nature of the portion which was found at the *post-mortem* examination "to hang like the ovary from the posterior surface of the broad ligament."

Report of the Committee.

"The growth is a multilocular cyst of the ovary. The small projecting portion on the external surface of the growth was found to be a small, distinct, exogenous cyst, containing fluid similar to that in the parent cyst. Careful examination did not reveal the presence of any portion of normal structure of the ovary." *December* 28*th*, 1876.

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11. *Myoma of the uterus.*

By Dr. J. C. Wilson.

The specimen was removed from the body of a colored woman, E. D., 67 years of age, who died in the medical wards of the Philadelphia Hospital, January 16th, 1877.

She entered the ward on the 6th of this month, and presented on examination the following conditions: great feebleness, extreme emaciation, marked ascites, no general œdema, no dropsy of the lower extremities. The apex of the heart was displaced to the left; the first sound was distinct. The radial arteries were highly atheromatous.

The debility was so extreme, and it was coupled with senile degenera-

tive changes so pronounced, that it was deemed inexpedient to disembarrass the abdomen of the fluid which distended it, and it was, therefore, not possible to reach a diagnosis.

Stimulus, suitable diet, iron, mild cathartics, and diuretics were ordered. She nevertheless grew rapidly more feeble, and, ten days later, died. The left ventricle was found after death to be somewhat hypertrophied; the mitral valve-leaflets were thickened.

There was collapse of the right lung, and some passive effusion in both pleural cavities. There was a large collection of straw-colored serous fluid in the peritoneal cavity. The kidneys were contracted and granular, and the pelvis of the right one was dilated by reason of obstruction of the ureter by pressure of the tumor. At several points there were signs of old local peritonitis, such as adhesions of the coils of intestines and thickening of parietal peritoneum. The pelvic cavity was occupied by a tumor the size of a cocoanut, which on investigation was found to consist of the altered tissues of the uterus. This mass was connected to the neighboring parts by ancient inflammatory adhesions, among which in dissection were discovered the atrophied ovaries. The tumor is large, its surface nodulated. Some of these nodules are firm; one or two are partially calcareous, whilst several are so soft as to give the sensation of a fluctuating fluid within. The sound enters the uterine cavity to the depth of four inches. On section the neoplasm is found to have invaded the uterine tissue in all directions.

Dr. Wilson said the question of the propriety of running the risks of any operation for the removal of the abdominal fluid in this case gave it some clinical interest. The woman was under his care ten days, during which time the belly was enormously distended with fluid. No previous history could be obtained; her debility was extreme; senile changes were very marked. Would it have been right to evacuate the fluid for the purpose of reaching a diagnosis? It did not seem probable that any treatment would rescue her; whilst the removal of the fluid, or indeed any operative procedure, might have been followed by such a catastrophe as fatal collapse. If she had been tapped, the tumor would have been discovered.

Dr. Hodge asked what was the probable cause of the ascites.

Dr. Wilson replied that none was detected other than the tumor. It was a matter of interest that, beyond the fact of this ascites, the woman was very feeble, emaciated, without œdema and without pitting of the lower extremities. The condition of the liver and kidneys was of course to be taken into consideration, but there was certainly nothing about the liver to account for it. No other abdominal viscera except the uterus

were involved. The heart was hypertrophied, but, although the valves were thickened, they were competent.

Dr. Hodge said some tumors of the uterus are said to produce ascites, although he did not think he had ever had a patient under his care in which this was the case. He thought Dr. Wilson had been correct in his treatment, and that there was no need of tapping the woman at the risk of her life.

He thought that still another fact of interest in connection with these tumors of the uterus was the apparent sense of fluctuation they often give, and unless one happen to be familiar with the fact it is almost sure to mislead. Not a few operators have made the mistake of plunging a trocar into such a mass, and had even done so after they had opened the abdomen for its removal.

Dr. W. H. Parish said that four years ago he had seen a case analogous to this at the Philadelphia Hospital. The woman was admitted to the medical ward with dropsy, then taken to the obstetrical as a case of pregnancy, then into the ward for diseases of women, and then back into the medical ward again, where she came under Dr. P.'s care. Her menstruation had ceased six months before, and her abdominal dropsy was so great that one night he thought best to tap her. Her exhaustion was doubtless not so great as that of Dr. Wilson's patient, and the woman was not so old. But after the tapping the tumor was easily diagnosed. After the tapping, in the course of a few months the dropsy returned, and she was again tapped. She finally died, and at the autopsy the diagnosis of a subperitoneal fibroid tumor was confirmed. In that case tapping was of great service. He did not think he would tap in similar cases unless extreme symptoms like those in his own case prevailed. He thought it not impossible that peritonitis might supervene.

Dr. Hodge thought the danger of peritonitis from tapping amounted to almost nothing when done with a siphon trocar, by which no air can enter. Even when a solid tumor of the uterus is punctured, apparently no inflammation results.

Dr. Wilson said he had not thought of the possibility of death from peritonitis so much as from collapse. *January 25th*, 1877.

12. *Ovarian cyst.*

By Dr. H. Lenox Hodge.

The cyst was removed from a patient 60 years of age, by the operation of ovariotomy, seven days ago. She has thus far done perfectly well, and has had no bad symptom. The cyst weighed with its contents twenty-two pounds, one pound being the weight of the solid portions, the rest being that of the fluid. The fluid was of a light straw color, specific gravity 1008, and did not contain albumen. It has been referred to the committee of this Society on the so-called ovarian cell, for examination. In October last I tapped this same patient, and the fluid then drawn from this cyst was clear and like water, almost colorless, specific gravity 1007, and did not contain albumen. It was also handed to the committee for examination. The Society, therefore, has the advantage of comparing the results of the two examinations of the fluid with the cyst as obtained by the operation.

The tumor, as viewed from the exterior, appeared like one large cyst, but through its walls one or two smaller cysts could be felt. The pedicle was long, thin, and narrow. The Fallopian tubes were greatly elongated and spread out upon the tumor. The remains of the ovary, much flattened, could plainly be seen in the outer wall of the tumor. Upon opening the cyst, on the interior wall the remains of smaller cysts could be seen, which apparently had broken into the larger cyst. One cyst as large as an apple remained, but communicated with the large cyst by an opening of the size of the finger, in its inner wall. Another cyst, of the size of a marble, remained perfectly distinct, and filled with a reddish gelatinous substance. This cyst was situated about two inches distant from the ovary. On the inner side of the ovary, and projecting into the cavity of the large cyst, were several small cysts.

The examination showed that the case was one of true ovarian disease. The disorder may have begun in the ovary, or it may have originated in the broad ligament and extended to the ovary.

Dr. James Tyson had examined, at the request of Dr. Hodge, the fluid removed from the cyst, with the following results. It was quite transparent, but exhibited a slight yellowish tinge, being in this respect different from the product of the previous tapping, which was colorless. The fluid when examined for albumen by Dr. Tyson (this test was deferred until the fluid was eight days old) was found to contain a small but easily appreciable quantity, had a specific gravity of 1008, reaction neutral, and on microscopic examination was found to contain a *very small number of the*

granular (so-called "ovarian") cells and an occasional compound granular cell. Of the "ovarian cells," two, three, and four were found in a single field of a one-fifth object-glass.

Dr. Hodge said he considered the changes in the fluid removed at successive tappings to be of great interest. He recalled another case, that of a lady from New Jersey, from whom he had removed a fluid having all the characteristics of that from a cyst of the broad ligament, being clear like spring-water, and not at all albuminous. At the second tapping it presented a light straw color, and came back quickly. At the third tapping it had all the characteristics of a fluid from an ovarian cyst.

Dr. F. P. Henry said the changes in the fluid might be explained by the varying blood-pressure. After tapping, the pressure in the interior of blood-vessels is greater, and the albumen more likely to exude than in the slow process of growth of the tumor.

Dr. Hodge said the specific gravity of the first tapping was 1007, that of the second 1008.

Dr. J. Ewing Mears said it is well known that in cysts of the broad ligament the fluid is a clear spring-water fluid, and in his experience with them he had never been able to find any solid elements nor any albumen present. With regard to the fluid of ovarian cysts, he was of the opinion that the changes in appearance and constitution, which are observed to take place after successive tappings, indicated changes in the cysts which attended their development. In simple unilocular cysts, in the early stages of development, the fluid obtained at the first tapping usually presents the following characteristic features. In color it resembles somewhat ascitic fluid,—may be designated straw-colored,—of rather low specific gravity, not very albuminous, and slightly viscid. Microscopic examination does not reveal the presence of cellular elements in great quantity.

In multilocular cysts, on the contrary, the fluid is of a dark chocolate color; of high specific gravity; highly albuminous, and very viscid. The microscope shows the presence of a large number of granule-cells, blood-corpuscles, granular débris, and sometimes cholesterine plates. Fluid of this character is that commonly regarded as distinctive ovarian fluid. When, therefore, it is found that the fluid removed at successive tappings presents marked changes in appearance and character, he thought it was correct to assume that there had occurred corresponding changes in the nature of the cyst. With regard to the presence of cells in the fluid of cysts of the broad ligament, he did not believe they were at any time found in large quantities. These cysts are lined by cylinder epithelium, and it is possible for some of them to appear in the fluid: he did not

think they underwent the rapid fatty degeneration characteristic of the cells lining true ovarian cysts, and hence they would not be thrown off in such numbers, and when exfoliated would not be so altered in appearance.

Dr. Hodge desired to know of Dr. Mears whether he thought the fluid of a second tapping of a cyst of the broad ligament would lose its spring-water appearance.

Dr. Mears replied that he did not think it would. The admission of air within the sac at the time of tapping might produce some conditions which would change the appearance and character of the fluid. He did not think the changes could be similar to those which had been observed to take place in the fluid of ovarian cysts after repeated tappings. In cysts of the broad ligament tapping is thought by some ovariotomists to be curative, as the cysts did not refill. He thought that Dr. Atlee recommended excision of a small portion of the cyst-wall, as sufficient to effect a cure.

Dr. Hodge said that Dr. Atlee formerly thought tapping was a cure for cysts of the broad ligament, but, finding that they returned, he devised the operation of removing a portion of the cyst-wall through a small abdominal incision. Now, however, Dr. Atlee believes that the whole tumor had better be removed, as in ovarian tumors; also that the tendency of ovariotomists now was to remove cysts of the broad ligament if they refilled after repeated tappings, as they sometimes do. *January 25th*, 1877.

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13. *Epithelioma of cervix uteri and vagina.*

By Dr. J. Ewing Mears.

The patient from whom the specimen was removed was seen by Dr. Mears in consultation with her family physician, Dr. Alfred Jones, of this city, January 30th, 1876. The following history was obtained at that time. Mrs. O., widow, æt. 36, states that her mother died at fifty-two years of age, of inanition, the result of a disease of the tongue which was pronounced by an eminent surgeon of this city to be malignant in character. Her father died of dropsy at the same age, the condition being caused, as stated, by structural disease of the liver. One member of the family, a sister, died of phthisis. Previous to her marriage, fifteen years ago, her own health was fairly good; since then it has not been good. Her first labor was premature, and gave rise to prolapse of the womb, for

the relief of which she wore a pessary. Four years since, she had frequent attacks of pulmonary hemorrhage, and was informed by the physician attending her at that time that she had phthisis, one lung being, as he stated, "all gone." Under the treatment of another physician, whom she consulted, the hæmoptysis ceased, and did not return until last year, when it was again relieved by her attending physician.

In the month of June, 1876, two weeks after the disappearance of her menses, she had a copious uterine hemorrhage, which continued for a number of days. Believing it to be the beginning of the menopause, she did not seek medical advice. During this time the death of her husband occurred, and she was subjected to great care and anxiety. In the next month, after a shorter interval following the usual menstrual flow, the hemorrhage recurred, and continued for a longer period. She now consulted her physician, who prescribed an astringent wash and placed her upon strong tonic treatment. A vaginal examination was not made. Each succeeding month the hemorrhage occurred, increasing in quantity and following quite closely upon the cessation of the menstrual flux. She has observed that the attacks were preceded and followed by a copious serous discharge; sometimes this was mixed with blood. She states that at no time has the discharge been offensive. She has suffered from severe pains in the lumbar and inguinal regions, which have interfered seriously with her work and rest.

By the advice of her physician, she submitted to a vaginal examination, when the morbid condition implicating the uterus was detected. On making digital examination, the growth was found to involve the entire external surface of the cervix uteri, and to extend a short distance into the canal. On the left a distinct neck could be felt between the diseased tissue and the utero-vaginal fold, while on the right the disease had involved the vaginal wall, thus obliterating all traces of the cervix. Manipulation provoked slight hemorrhage and pain.

Four days later the growth was removed, the galvano-cautery wire being employed for this purpose. This was only partially successful, owing to the melting of the platinum wire. The operation was completed with the scissors, and the hemorrhage controlled by the galvano-cautery, which acted admirably. The surfaces were freely touched by the cautery, thus removing all of the morbid tissue. The patient is doing well, no examination having thus far been made to determine the condition of the parts. No bleeding has occurred, and but slight suppuration is present.

February 8th, 1877.

Report of the Committee on Morbid Growths:

"The specimen presented by Dr. Mears, removed from the vagina and os uteri, shows by microscopic examination the characteristic structure of an epithelioma, having long prolongations of epithelial pegs into the submucous tissue, in which were seen a few epithelial pearls. The papillæ of the mucous membrane were exceedingly large, measuring in length from $\frac{1}{80}$ to $\frac{1}{60}$ of an inch, and from $\frac{1}{500}$ to $\frac{1}{800}$ of an inch in width."

March 8th, 1877.

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c. MALE ORGANS OF GENERATION.

14. *Elephantiasis of the penis.*

By Dr. E. O. Shakespeare, for Dr. F. Duffy, of Newbern, N. C. History by Dr. Duffy.

The patient, a robust man, æt. 47 years, consulted me about the middle of January, 1876, on account of a swelling of his penis, which he said commenced to make its appearance about three weeks previous to that time. He lived in the country, and having occasion to evacuate his bowels, had gone into the woods, where his genital organs had come in contact with some bushes or grass. This was only a coincidence, but at first it was thought probable that there might be some connection between this circumstance and the swelling of the penis, as some venomous insect might have inflicted a wound which did not at first attract attention. Patient said a red spot at first appeared on the glans. This was attended with some itching and stinging sensations, and simultaneously the whole organ began to enlarge, and continued steadily to increase in size until he consulted me, when it was about six inches in circumference at the largest point, which was about midway the corpora cavernosa. The organ had very much the appearance of a very large physiologically-erect penis, with the exception of the slight bulging in the centre and perfect flaccidity at the root. It was red and hard, except that the edges of the retracted prepuce were œdematous and pitted on pressure. At this time there were no ulcerations or abrasions of the skin anywhere. In the right groin a gland was enlarged to about the size of a walnut. Soon afterwards the glands on the left side became involved. The penis and neighboring glands continued, in spite of every expedient, to enlarge in size, until the skin was about to burst, having already, in the course of three or four weeks from the time it was first seen by me, begun to ulcerate from undue

tension. I decided to make two lateral incisions along the penis down to the corpora. This being done, the organ seemed to reduce a little in size, the venous oozing was considerable, and some arterial branches required torsion. Its appearance was now quadrilateral, from the gaping of the wounds, which showed no tendency to heal, but required constant applications of disinfectants to prevent ulceration and sloughing, which process would occasionally open small blood-vessels, and cause troublesome hemorrhage. Amputation was advised, but the patient was slow in assenting to it, until the penis measured twelve inches in circumference, and the glands in the groins were as large as a man's fist. About the middle of March amputation was performed, with the galvano-cautery,—Byrne's battery being used. To get all the diseased tissue the wire loop was pushed close down to the root and part of the scrotal skin included. The operation was not bloodless, as it was intended to be: on account of tightening the wire a little too fast, an artery required a ligature, and some other bleeding points were touched with the actual cautery. For several days after the operation the urine had to be voided by a catheter. The patient had some enlargement of the prostate gland, but up to this time had no difficulty in emptying his bladder, except as a scale, which was easily removed, would form on the slightly ulcerated meatus urinarius.

The stump was a broad, open wound, which granulated and healed slowly, while the glands continued to enlarge, and the patient to become more and more emaciated. I now tried electrolysis on the enlarged glands, being assisted by Dr. Attmore, whose Dresher's battery we used, with a power varying from twelve to twenty cells, and at first twice a week, then at intervals of a week and longer. The needle was attached to the negative pole and inserted well into the gland, usually through the centre, while the positive pole was placed at a short distance from the gland,—sometimes shifted on it. The current was continued twenty and thirty minutes at a time, sometimes causing considerable burning pain. Several weeks after the last electrolysis the glands were fully as large as ever. They were, before the electrolysis, somewhat soft and doughy to the touch, the skin being bluish and thin. We thought they were somewhat liquefied by the current at first, but were not certain of it.

On the right side, extending from the enlarged glands to about the pubic symphysis, and into the edge of the wound, was a hard ridge as large or larger than a man's thumb.

About the middle of April I was taken sick, and lost sight of the patient until early in June, when I was requested to visit him at his home in the country, to which he had removed during my illness. I found him ex-

piring and emaciated to the last degree. The wound left by the amputation had entirely healed, and, strange to say, the enlarged glands had entirely disappeared, neither was there any denuded or ulcerated surface or enlarged gland anywhere to be found. The emaciation was so extreme that the anterior abdominal wall seemed to rest on the vertebræ, which could be felt distinctly. Any lumps in the abdominal cavity must have been felt, if present. In the centre of his forehead there had appeared a small elevation like an exostosis. His attendants had not noticed that the glands were disappearing until about one week before his death. The increasing emaciation must have made them appear more prominent, even if they were decreasing in size.

The patient for a long time had eaten but little, although I had laid great stress on the necessity of nourishment. For one or two weeks before his death I was informed that he had eaten almost nothing. Two or three days before death he began to have diarrhœa, passing dark tarry discharges in bed. His skin was very harsh and dry. Altogether death seemed to result from starvation.

A *post-mortem* examination could not be obtained.

While this case was under every-day observation, the temperature was habitually above the normal, being about 100° and 101°. Once a slight attack of pleuritis complicated his case, and on several occasions he had malarial chills. At such times he had considerable fever. Pain was never a prominent symptom; the diseased organ was sensitive to the touch, and its great weight rendered much care necessary in handling and supporting it, but when comfortably dressed and supported it was usually free from pain. There was no history of any hereditary or diathetic disease in the patient's family. His own health was habitually good. He had never had any venereal disease, was married, and of very correct habits.

Iodide and bromide of potassium were for a while freely tried in this case. Tinct. muriate of iron was administered three times a day, and quinine given as there seemed to be any indication. As a local application, carbolic acid seemed preferable to salicylic,—possessing anæsthetic as well as disinfecting properties. After trial of various articles, carbolic lotion and iodoform, in powder or mixed with calomel, were determined to be the most comfortable and efficacious dressings. It is very remarkable that the diseased glands and all other external appearances of disease in this case should vanish, notwithstanding the fatal termination. There is no question as to the neoplastic nature of the penis and neighboring glands. The products and appearances of simple inflammation are widely different from what has been described. If electrolysis caused the dispersion of

the glands, it was a long time after the last operation before there was any perceptible diminution. It is possible that they may have been starved out, as the body became more and more emaciated, and smaller blood-vessels became obliterated, and the calibre of larger ones diminished. In the mean time, as the softer and more watery tissues of the body were absorbed, the more vital parts, as it were, feeding on the less vital, these glands may have been decomposed and absorbed. The electrolysis may have left the glands in a more fit condition for this result. Death of the patient may have resulted from slow starvation, without any anatomical lesion which was necessarily fatal. Or the lymphatic system may have been so diseased as to lead to this result necessarily. It is worthy of note that, in the amputation of the penis, the urethra was not stitched back, nor was any means employed to prevent its retraction, which seems to be unnecessary where the amputation is done with the galvano-cautery. Having consulted a number of standard works on surgery, I have not found the galvano-cautery recommended except by Bryant. He, however, advises the stitching back of the urethra after the amputation. This would seem to be unnecessary for two reasons:

1st. The albumen of the tissues is coagulated by the white hot wire, and the urethra and surrounding parts agglutinated together, so that no contraction can occur before cicatrization has taken place, at least in some degree.

2d. The wire can be so manipulated as to make the urethra the highest part of the stump. When a part is amputated the wire invariably has a tendency to work upward toward the distal extremity, so that the amputated part (neck of the womb, for instance) has a base in appearance like an inverted cone. If, in amputation of the penis, the traction on the hot wire is made from the dorsum towards the urethra, a little dexterity (provided the situation of the urethra is borne in mind) can make the urethral orifice the highest point. The result in the above case justified the experiment. Although the organ was extremely large and vascular, the operation might have been entirely bloodless but for a little too much haste. It is proper to state that the opinion of my brother, Dr. C. Duffy, Jr., based on his experience in the amputation of the cervix uteri, led to the trial by me of the above experiment in omitting to stitch back the urethra.

Dr. John Ashhurst, Jr., said that although glandular enlargement was not a very frequent accompaniment of elephantiasis Arabum, it was occasionally met with. The older members of the Society would remember the specimens of enormously enlarged cervical and bronchial glands (the

latter the immediate cause of death) presented by him in 1864. (See Proceedings, vol. ii. p. 155.)

In this case several broad patches on the body closely resembled Arabian elephantiasis, and were considered to be of that nature.

Dr. R. M. Bertolet asked whether there were any secondary deposits as determined by *post-mortem* examination.

Dr. Duffy said glandular enlargement had existed in the groin on the right side before incision was made, but subsequently this disappeared, and there was none anywhere in the body. *October 26th*, 1876.

Report of the Committee on Morbid Growths:

"An examination of the penis referred to the Committee on Morbid Growths shows, microscopically, an increase in the size of the papilla of the cutis; the layer of epithelial cells covering the same is much thickened. A transverse cut of the vessels presents their lumina much diminished in size, while the connective tissue surrounding them is found increased. No nerves were seen in the section. The hyperplasia depends upon a hypertrophy of the connective tissue in the organ, which tissue is observed as fibres running in every possible direction. This peculiar arrangement of structure would determine the disease to be *elephantiasis Arabum*."

December 14th, 1876.

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15. *Cystic kidneys: stricture of the urethra.*

By Dr. J. H. Brinton.

These two kidneys were taken from the body of a man æt. 45. His history was as follows. He first contracted a gonorrhœa ten years ago, which was cured in about a month and a half. He again contracted a gonorrhœa a year and a half since, and again about July, 1876. In the last three months he had experienced great difficulty in passing his water, the stream gradually diminishing until it passed only in drops, and the effort of urination was accompanied always by severe straining and by much pain. In December, 1876, he was admitted into the Philadelphia Hospital, with symptoms amounting almost to retention. On examination two urethral strictures were detected, one situated about two and a half inches from the meatus, and the posterior one, which was very tight and firm, about five and a half inches from the orifice.

The anterior stricture was dilated with difficulty; the posterior one proved to be obstinate, and, although it could be passed, resisted to a

marked degree instrumentation with catheters and sounds of a greater calibre than Nos. 3 and 4 of the English scales. By gentle manipulation it was, however, dilated so that Nos. 8 and 10 could be passed, but the passage of instruments was at times attended by decided evidences of urethral irritation. The urine was at different periods in his treatment examined, but no albumen or other abnormal constituents could be detected. During the early part of February vague symptoms of abdominal irritation occurred, accompanied by a persistent hiccough which defied all treatment. The man gradually became worse, œdema of the lungs supervened, and he died on the 18th of February.

On *post-mortem* examination the heart was found to be healthy, the lungs were both œdematous, and both kidneys were enormous and equally enlarged, and filled with multilocular cysts containing a limpid fluid. Each kidney, when placed in a jar, displaced about one hundred and fifty-six ounces of water. The ureters were normal, the walls of the bladder slightly thickened, and in the urethra the posterior stricture above described was found to be firm and impervious to the passage of a No. 9 sound; the anterior stricture was dilated; the prostate gland was normal.

February 22d, 1877.

Report of the Committee on Morbid Growths:

"The kidneys presented by Dr. Brinton and referred to the Committee on Morbid Growths show, macroscopically, numerous large and small cysts containing a yellow semi-fluid substance. A thin section, by microscopic examination, exhibits the secreting structure of the kidney, which has not been destroyed by the formation of the cysts, to be in an advanced stage of interstitial nephritis, the blood-vessels, uriniferous tubes, and Malpighian bodies being surrounded by a dense fibrillated tissue. The uriniferous tubules are in places completely obliterated; their lumen cannot be recognized, and the lining cells are in a state of fatty degeneration. A microscopic examination of the cysts shows their walls to consist of fibrous tissue, lined upon the inside by a flat epithelium; their contents consist of large epithelial-like cells, irregular in shape, some measuring as much as $\frac{1}{200}$ of an inch, numerous pus-corpuscles, fat-globules, and granular débris. From which your committee consider the kidneys to be in a state of cystic degeneration, with secondary chronic interstitial nephritis."

March 8th, 1877.

d. MAMMARY GLAND.

16. *Scirrhus of the mammary gland.*

By Dr. J. M. Barton.

The specimen was removed from Mrs. C., æt. 51 years.

It is of interest in connection with that of malignant disease of the stomach just presented. In neither case did any symptoms present themselves until quite recently, and at no time was either the seat of any pain.

This tumor presents the usual appearances of mammary scirrhus. Notwithstanding the evident age of the growth, as shown by its size and the fact that some portions had already become softened, it had failed to attract the attention of the patient until a few weeks previous, and then only by its weight and bulk, and not by pain. *January 25th*, 1877.

Report of the Committee on Morbid Growths:

"The mammary gland presented by Dr. Barton exhibits all the characteristics of a scirrhous tumor." *February 8th*, 1877.

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17. *A firm adenoid tumor from the mammary region.*

By Dr. John Ashhurst, Jr.

The tumor, removed from a young married woman, and which had existed for nearly a year, was about the size of a filbert. Though not painful, it was a source of annoyance to the patient. Upon removal, it was found that, though apparently quite distinct from the mammary gland, it was actually connected with the latter, a condition which, as pointed out by Birkett, invariably exists in the case of these outlying mammary growths. The tumor was invested with a distinct capsule of connective tissue, and with it was removed the adjoining portion of the mammary gland.

January 25th, 1877.

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18. *Acute carcinoma of breast.*

By Dr. John Ashhurst, Jr.

The specimen is one of rapidly-growing cancer of the breast, removed by operation from a married woman 44 years of age. The duration of the

disease has been seventeen months, and the tumor, which was of unusually large size, involved the pectoral muscle, a considerable portion of which was removed (laying bare the ribs and intercostal spaces), as were also several lymphatic glands in the infra-axillary region. The operation was performed on January 27th, and the after-progress of the case had been complicated by the occurrence of secondary hemorrhage on the fifteenth and sixteenth days, and of a sharp attack of pleurisy on the nineteenth day; but the patient survived these risks, and at the date of the report was thoroughly convalescent.

Dr. Nancrede has made a microscopic examination of the growth, and found it to present the characteristic appearances of encephaloid cancer.

March 8th, 1877.

VI.—THE NERVOUS SYSTEM.

1. *The anatomy of the cerebrum.*

By Dr. Harrison Allen.

The difficulties attending the study of cerebral disease do not always cease with the autopsy, since the results of examination of the skull-contents, as ordinarily conducted, are too frequently inconclusive and contradictory. To invite attention to the necessity of more extended study of the brain,—namely, the microscopical anatomy, both in health and disease,—with a view of lessening, if possible, such discouraging results, is the chief object in preparing this article.

A secondary object is to emphasize the importance of determining the ranges of variation in the brains of idiots and others, and also the possible deviation from the adult standard in old age.

Every physician well knows that, after the closest study, the lesion does not always hold the anticipated relation to the symptoms. It is enough for the candid reader to accept the indications held out by anatomy and physiology, for it is by these alone that clinical histories can be interpreted.

The plan of the cerebrum is briefly as follows:

(1) The optic thalamus at its junction with the crus cerebri is the point upon which the cerebrum turns downward to form the temporo-sphenoidal lobe. Thus the fornix describes a curve from the front of the base of the thalamus in front to the base of the descending horn behind. Concentric within the curve of the latter is the dentate convolution, and beyond it, but beginning at about the level of the corpus callosum, is the hippocampal sulcus. The corpus callosum not only separates the region of the thalamus from the upper portion of the cerebrum, but it makes the calloso-marginal convolution continuous with the hippocampal convolution. The extension of the occipital lobe backwards determines the calcarine and parieto-occipital fissures.

(2) The striated body is the point from which the anterior portion of the brain turns upward. Hence we have on the median surface the calloso-marginal convolution curving round in front of it. The space

between this convolution and the upper surface is occupied by others more or less concentric therewith.

(3) The olfactory bulb determines the position of the straight sulcus, and, through the union of the peduncles with the corpora quadrigemina and the optic thalamus, occipital and temporo-sphenoidal lobes, gives unexpected importance to parts remote from one another.

Thus, while the anterior portion of the cerebrum is moulded about the striated body, the middle and posterior parts are moulded about the optic thalamus. When the relation of these two ganglia with the crus cerebri is remembered, viz., the under surface or *crusta* belonging to the first mentioned, and the upper surface or *segmentum* pertaining to the last, we are prepared to learn that the anterior lobes are connected with motion, and the middle and posterior with sensation. The commissural union of the olfactory and optic centres with the latter region is in harmony with this identification. Meynert (Stricker's Manual of Histology, 1872, ii. 409) has affirmed that the temporo-sphenoidal and occipital lobes have direct association, and has shown that patches of sclerosis occur therein in some cases of atrophy of the optic nerve.—(*Œster. Zeit. f. prakt. Heilkunde*, 1869, 14.)

The association of lesions of the anterior portion of the cerebrum with hemiplegia of the opposite side is well established, and also of aphasia with morbid changes in the parts surrounding the island of Reil.

The difference in appearance of the frontal and the temporo-sphenoidal and occipital lobes is very striking. In the frontal lobe we have associated with the septal area the olfactory bulb as well as the genu and rostrum of the corpus callosum. But while thus compact, fixed, and entering largely into the median parts of the base of the brain, and sending a fasciculus and a special layer of cerbea to the temporo-sphenoidal lobe, it is without any fissure answering to central structure. The temporo-sphenoidal and the occipital lobes (considering them together, which is tenable) are, on the other hand, determined by the curve of the dentate convolution and fimbriated body around the thalamus. These parts are disposed laterally, and are thus, at least towards their distal ends, free, and form the posterior boundary of a deep fissure (the beginning of the descending horn of the lateral ventricle). Neither of these lobes is fixed to the corpus callosum, while this latter structure projects and yields a free border. Both lobes possess distinct and constant fissures, the hippocampal for the temporo-sphenoidal and the calcarine for the occipital,—which correlate to important central structures. These fissures tend to relax the firmness of the cortex, a tendency still further aided by the deep parieto-

occipital and collateral fissures. The median surface as it joins the outer is marked by several sulci besides the parieto-occipital. Such sulci are scarcely ever seen in the frontal lobes.

We are prepared to learn that the greatest variability exists in the sulci and convolutions of this portion of the cerebrum, particularly in the occipital portion, which being the last to be formed (both in the individual and in the species) is the most liable to slip back in its detail of formation. In a word, the principle of reversion finds illustration in the variations of the sculpturing of the cortex.*

It is true that great variation also exists (see Weinert on supra-orbital convolutions, in different races: *Med. Jahrbücher*, xix., 1870) upon the under surface of the frontal lobe at its outer portion, with reference to the arrangement of the inner, middle, and outer convolution (tri-radiate of Turner) with the transverse basal convolutions. But these exist in less degree than those already noted. The value of the fornix as a means of union between the base of the brain and the temporo-sphenoidal lobe is enhanced when we remember that the dentate convolution is an outgrowth from the fornix behind, according to Schmidt (*Zeit. für Wissenschaft. Zool.*, xi.), while fibres pass from the anterior column of the fornix to the septal area in front. It is by no means a rash statement that the calloso-marginal sulcus is first determined not by the corpus callosum, but by the striated body and possibly by the septal area aided by the aberrant fibres of the fornix, while we know that the hippocampal sulcus is fixed by the dentate convolution and fimbriated body. Now, the hippocampal sulcus is continuous with the calloso-marginal over the posterior free edge of the corpus callosum, and in congenital deficiencies of this commissure it is probable that the median surface of the cerebrum will be found to present a continuous arched sulcus from the base of the brain in front to the base of the temporo-sphenoidal lobe behind.

In studying the brains of idiots we find that the most constant among the smaller convolutions, according to Marshall (on a brain of a Bush-woman and of the brains of two idiots of European descent: *Philos. Trans.*, 1864, 501), are the three frontal convolutions, the supra-marginal and angular convolutions, the temporal convolutions on the outer side of

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* The constancy of the calcarine fissure in the mammalian brain being pronounced in lower types of brains of the placental mammals, is in apparent contradiction to the assumed position that the occipital lobe is an outgrowth from the temporo-sphenoidal. It is necessary to go below the placental mammals to obtain the true evidence. In marsupials and monotremes the calcarine fissure is absent, but the dentate fissure is present throughout.

the cerebrum, and the marginal, calloso-marginal, and annectant convolutions with the quadrate and cuneate lobules on the inner or median side.

The most inconstant are the outer orbital and the occipital convolutions. Thus the parts influenced by the presence of the basal ganglia are the most constant, while those remote from these are subject to great variation.

Among other features of the brain of the idiot may be mentioned the reduced size of the island of Reil and of the striated body,* the former being without convolutions, and the latter having associated with it a small *corona radiata*. It is evident, from Marshall's figures (although he makes no allusion to it), that the parieto-occipital fissure is remarkable for sending a long anterior branch downward and forward. It is of interest to notice the same branch in the brain of the *chimpanzee*. The great relative development of the first temporal sulcus and its occasional union with the parieto-occipital fissure, and the extension of the calcarine fissure backward to the apex of the occipital lobe, are characters seen in some of the quadrumana.

Such considerations pertain to pathological science, as studies of arrests of development, apart from their general interest. The more we recognize the essential points of structure present in the human brain, even in the lowest races and in idiots, the nearer we are to seizing the essential lesions in mischief coming to the organ itself.

In this connection we give a hint of a most important line of study, the outline of which is even now scarcely discernible, viz., the changes that occur in the cerebrum as affected by age and habit.

How is the training of a feeble-minded child accomplished? As commonly given the answer is, "By improving the quality of its brain." Is it rash to suppose that a brain characterized by arrest of development may actively renew under favoring conditions the process which had ceased? A small striated body and feebly developed corona radiata may become more decided, and, in consequence of this, sulci may make their appearance upon the island of Reil. However we may trace the lines of improvement, it is possible that they depend not merely upon improving the quality of the brain-substance.

Physicians in charge of institutions for training the feeble-minded are in position to occasionally secure the brains of those who had improved under treatment. By careful comparison of such brains with those already recorded, much of interest might be secured.

The following extract from Flower's memoir on the posterior lobes of

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* Also the *flocculus*.

the cerebrum of the quadrumana (*Phil. Trans.*, 1863, 189) is of significance, and may be quoted in this connection: "Many variations in the construction of the posterior (occipital) lobe must be ascribed rather to pathological changes than to original conformation. Thus in aged and debilitated subjects the posterior cornu is often enlarged and somewhat funnel-shaped, the calcarine process (hippocampus minor) being more or less obliterated, a circumstance arising from the gravitation of the intraventricular fluid during long-continued recumbent position. In atrophy of cerebral substance from whatever cause, attended by increased size of the ventricular cavity, the change is usually most strikingly seen in the posterior cornu."

The relation between the brain-tissue and the arteries supplying it is such that the lesions of the former demand a careful consideration of the latter. It has been shown by Pintrac (Traité théorique et pratique des Maladies de l'Appareil nerveux, 1869, ii.) that by far the greater number of cerebral hemorrhages occurred in structures supplied by the anterior and middle cerebral arteries. Out of five hundred and sixty cases collected by him, the occipital lobes, which are supplied by the posterior cerebral, were the seat of hemorrhage in thirty-three instances. Duret (*Archives de Physiologie*, 1873–1874, 316) has shown that the caudate nucleus of the striated body receives fewer twigs from the anterior cerebral than the lenticular ganglia. Hence we are prepared to learn of Broadbent (*Roy. Med. and Chir. Soc.*, rep. in *Med. Times and Gazette*, July 15th, 1876) that hemorrhage is apt to occur towards the outer part of the corpus striatum, notably between the lenticular nucleus and the outer white capsule. The clot may here, by its outward pressure, obliterate the convolutions of the island of Reil, though rarely rupturing the cortex.

C. H. Jones (*Medical Times and Gazette*, May, June, 1872, 503, 562), in reviewing the relation between the locality of the morbid foci and the symptoms, has reached the following conclusions: 1st, That the locality of the lesion will be elected by reason of impairments of nutrition already predetermined. 2d, That *pressure*, as illustrated by the presence of large clots of blood, seldom yields special or localized lesions, but coma and general paralysis. 3d, That *irritation*, as from disturbances excited by local change, more or less abruptly induced, results in convulsions, hemiplegia, or paralysis of distinct cranial nerves. 4th, "That morbid states of a given centre may so affect other centres with which it is commissurally connected as to disorder or arrest their function." The acceptance of the last-mentioned statement explains the difficulty of diagnosing cerebral lesions without an exact knowledge of the minute anatomy of the brain.

According to M. Benedikt (on the laws of Topog. Diag. in Chr. Diseases of the Nervous System: *Allg. Wien. Med. Zeit.*, 1873; tr. in *Jr. Psych. Med.*, N. S., i., 1874, 34), it is necessary to locate the symptom in its appropriate centre, and not to carry attempts at centralization too far. He esteems highly the fact that a pronounced centre, such as the quadrigeminal mass or a cerebellar hemisphere, may exert a controlling (co-ordinating) influence over the function of an adjacent motor tract. Thus a damage to either of the above structures may lead to paralysis without any motor nuclei being directly involved.

The same writer assigns to Betz, but without reference, the very important statement (if true) that the *claustruna* (*i.e.*, the cerbea as modified at the island of Reil) is the region of aphasia, and that it possesses at its posterior part "a central ganglion" for the hypoglossal nerve.

In conclusion it may be said:

(1) That in seeking for lesions of the cerebrum, the lines of commissural association must be considered.

(2) That in studying arrests of development of the cerebrum, comparison of the brains of idiots and lower races of man and animals should be insisted upon.

(3) That the greatest variations in the cerebrum are seen in the areas of least compactness, the occipital lobe being the most variable.

(4) That careful study should be given to the brains of the feeble-minded who have improved under treatment, and to the possible changes in the arrangement of the parts of the cerebrum under the influence of age, disease, or both. *October 26th*, 1876.

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2. *Cerebral abscess and dilated bronchi.*

By Dr. J. H. Hutchinson.

The following history of the case, from which the specimens I present this evening were derived, is drawn up from notes taken at the bedside by Dr. Morris J. Lewis.

H. A. P., æt. 36; single; moulder; born in Philadelphia; was brought into the surgical ward of the Pennsylvania Hospital on March 6th, 1877, having been found a short time previously in the street in an unconscious condition. On admission he was comatose, and paralyzed as to motion and sensation, evincing not the slightest sensation when pricked with a pin. Pulse, 80. Respiration, 20, and stertorous. His breath smelt of alcohol, and, as no marks of injury could be detected, his condition was at

first not unnaturally attributed to drunkenness. Later in the day he showed symptoms of improvement, which had so far advanced the next day that he was able to give his name and age. As a careful examination showed he had pneumonia, he was transferred to the medical wards under my care.

I saw the patient for the first time on the 8th, when, in spite of his extreme restlessness, which made the physical examination of his chest extremely difficult, I detected dulness upon the right side below the spine of the scapula, together with subcrepitant râles, bronchial respiration, and increased vocal resonance. None of these signs were, however, so marked as it is usual to have them in the croupous form of pneumonia, and, as the vocal fremitus was also not much increased, I thought it more probable that I had to do with a case of catarrhal pneumonia,—a view which was borne out by the character of the expectoration, which was scanty and tenacious, and not stained by blood. On the left side the physical signs indicated the presence of pleurisy with a slight effusion. The heart-sounds were normal. On examination the urine was found to be orange-colored, cloudy, acid in reaction, and to have a specific gravity of 1022. It contained neither albumen nor sugar. The patient's head was drawn very slightly to the left side, but this retraction was so slight, and appeared to pass off so completely upon moving the head, that, notwithstanding the presence of delirium, no further attention was paid to it at the time, it being thought that the delirium was in all probability a consequence of the inflammation within his chest.

A few days after the patient's admission into my ward it was noticed that his breath was horribly offensive, especially after coughing. This, with the fact that at a point in the right interscapular region, one and one-half inches above the inferior angle of the scapula, gurgling was distinctly heard, made me suspect that gangrene of the lung had set in. The expectoration was found, however, not to resemble at all that which takes place in gangrene, being light in color and free from odor. Gurgling was also heard, but less distinctly, towards the base of the chest on the same side. These signs, therefore, seemed to indicate the existence of dilatation of one or more bronchial tubes. About the same time ægophony was heard upon the left side, but disappeared in the course of a few days. Delirium still continued, but there was no longer paralysis, the patient frequently leaving his bed to wander about the ward, to prevent which mechanical restraint was occasionally necessary. Apparently there was no loss of sensation, and there was certainly no hyperæsthesia of any part of his body; but, as will readily be understood, the examination of the sen-

sory condition of the surface was surrounded with difficulties not easily overcome. He was able to answer simple questions intelligently enough, but could not yet give a connected account of the manner in which his seizure came on.

On the 18th I found him lying in bed with his head drawn to the left side, the left sterno-cleido-mastoid muscle and platysma being firmly contracted, while the muscles at the back of the neck were relaxed. The face was also drawn to the left side, and the tongue protruded to the right. Any attempt to straighten his head gave rise to intense pain, which was distinctly shown by the expression of his face. The right pupil was very small, but reacted perfectly to light. The left eye could not be examined, owing to marked symblepharon, the result of an old injury. An ophthalmoscopic examination, which was made with some difficulty, as the pupil dilated very little under the influence of atropia, revealed slight choking of the disk, with white patches on its nasal side,—probably the remains of old hemorrhages. The patient's mind was also more confused, but there was no paralysis of the body or of the limbs, and no inability to take food, which was of course given to him in the form of milk and beef-tea. He had also recently been taking four ounces of whisky daily.

Up to this time the patient had been taking quinia, opium, and digitalis, but he was now, in view of the threatening cerebral symptoms, placed upon twenty grains of the iodide of potassium three times a day. He was also ordered an increased amount of stimulus. The physical signs of the disease of his lungs remained unaltered. Under this treatment he slowly improved. At times there was slight twitching of the muscles of the legs, and on the 23d of April I find that "apparent anæsthesia of the right side of the body" is noted, and on the 26th that an eruption somewhat resembling that of urticaria, but differing from this in the color of the wheals, which were red, is said to have taken place. It was entirely unlike that usually caused by the iodide, and disappeared in the course of a few days. On the 1st of April the stiffness of the neck had entirely disappeared, and his mental condition had so far improved that he was able to give some account of himself, but it was still disconnected. On the 9th of April the following facts in his history were obtained from him:

His mother died of some fever. There appears to be no tendency to hereditary disease in his family. When a boy he had remittent fever. In 1863 he was struck by a splinter, which caused an injury which resulted in the symblepharon already alluded to. About eighteen years ago he contracted gonorrhœa, but he denies ever having had a chancre or any evidences of constitutional syphilis. He has been a pretty hard drinker.

In February, while feeling perfectly well, he went to work in a white-lead factory, where he remained only three days. The time of exposure was so short that it is impossible to believe that lead-poisoning can have anything to do with his present condition, especially as we cannot obtain from him an admission that he has ever suffered from colic or obstinate constipation. Moreover, no blue line could be discovered on the gums. About this time an attack of bronchitis occurred, accompanied by very little expectoration. On the morning of March 6th, the day of his admission into the hospital, he felt perfectly well, being entirely free from headache; but while walking in the streets he suddenly became unconscious.

This improvement was of short duration, for on the 13th of April his temperature rose to 103°, and his face was observed to be drawn to the right side. The iodide of potassium, which had been discontinued a few days before, was again ordered, but in larger doses. Unfortunately, its effects were not so beneficial as before, for in a few days all the former symptoms had returned with even greater intensity than at first. It was rather singular, however, that this time the head and face were strongly drawn to the right side. The patient's cough, which had almost entirely disappeared under treatment, had again returned, and with it the former fetor of the breath. The physical signs were still as before,—dulness on percussion below the spine of the scapula on the right side, increased vocal fremitus, and resonance. Coarse mucous râles almost amount to gurgling towards the base of the lung, with well-marked gurgling, pectoriloquy, both sonorous and whispering, and occasional ægophony at a point in the interscapular region an inch and a half above the inferior angle of the scapula.

I shall leave to Dr. Longstreth the task of describing the *post-mortem* examination.

Post-mortem record, by Dr. Morris Longstreth, Pathologist to the hospital.—*Autopsy* eight hours after death. Rigor mortis marked. Abdominal cavity presented nothing unusual. There was general adhesion of right pleura; on the left side there were adhesions over whole upper lobe, and partially over lower lobe and lung. Pericardium contained a small amount of clear serum; no evidences of inflammation.

Heart.—Left ventricle firmly contracted. Right ventricle relaxed. Right auricle contained fluid blood and fibrinous clots, continuous into the venæ cavæ. Right ventricle contained a little fluid blood and fibrinous clot. Left side of heart nearly empty. The orifices and valves were normal. Weight twelve ounces.

Slight atheroma of aorta.

Lungs.—The anterior parts of both lungs were normal; posterior parts were solid. The right side was more affected than the left. On the *right* side the condition seemed to be due to collapse of the tissue, with a superadded inflammatory trouble; on section, the tissues exuded some blood and serum, not frothy; the surface of the cut section was not granular; the resistance was slightly lessened. On the *left* side, posteriorly, a section gave abundance of bloody serum and blood, somewhat frothy. This side presented much less evidence of inflammatory change.

The *bronchial tubes* in the right lower lobe were found dilated, as well as the main bronchus. The mucous membrane was thickened, red, and thrown into folds.

Spleen normal. Weight, five ounces.

Kidneys were both large, congested. The capsule was more than normally adherent, tearing the surface on removal, and leaving the surface of the organ slightly granular. The appearances were more marked in the right organ than in the left. Right kidney weighed five and a half ounces; left, six ounces.

Liver.—Outline was regular. Its tissue appeared normal. Weight, three pounds nine ounces.

Stomach.—There were marked post-mortem changes; otherwise the organ appeared normal.

Intestines.—There was no special examination carried out; their general appearance was normal.

Head.—Scalp was not congested. Calvaria presented nothing especial.

Membranes.—Dura mater not specially adherent; not congested. It was tightly stretched. The Pacchionian bodies were conspicuous. The arachnoid on the convexity of anterior lobes was thickened, and of a pinkish color. The vessels of the pia mater were full of fluid blood. The longitudinal sinus was apparently empty.

At the base of brain, the interpeduncular space as far forward as the optic commissure was covered with a layer of pinkish-white lymph, resting beneath the arachnoid. The inflammatory deposit extended outwards into the beginning of the fissure of Sylvius on each side.

In dividing the nerves, etc., at the base, very thick pus escaped, coming, apparently, not from the infundibulum and third ventricle, but from an opening behind and to the right side. The nerve-trunks presented nothing abnormal. The arteries were not atheromatous. The branches of the left middle cerebral were fuller of blood than those of the right, especially the terminals; but no obstruction of the larger branches was discovered.

The floor of the third ventricle was bulging; otherwise there was no distortion of the parts at the base of the brain.

The lateral ventricles were filled with cloudy serum; in some parts, this mixed with pus of the same character as that escaping at base on the removal of the brain. [It is probable that the pus found here was the result of the dissection.] The cavity on both sides was somewhat enlarged, more in the anterior and posterior cornua than in the central part and middle horn; it was especially to be noted in both posterior cornua. The choroid plexus was pale. The ependyma was thickened, especially over the great ganglia. The septum medium was found ruptured, and the parts softened. The under surface of the corpus callosum was markedly softened, and its tissue, even in its depth, showed areas of vascularity or ecchymosis.

The right optic thalamus felt softened; the left had its surface uneven, and part of it felt firmer than the surrounding brain-substance. On section of the right ganglia there was found an area, reaching nearly up to its ventricular surface, and extending towards the base, partly filled with thick pus. It was about the size of a pigeon's egg. The walls of the abscess were of considerable thickness, although not dense. The cavity was somewhat irregular in outline.

A section of the left optic thalamus showed its substance nearly normal, although its deeper parts presented increased vascularity.

The left corpus striatum was normal, while the right ganglion was of less firm consistence.

The third ventricle seemed narrowed; its walls were softened, and it contained some purulent matter and serum. Its commissures were intact.

The aqueductus Sylvii was not dilated, and the parts around it presented nothing especial.

The fourth ventricle was dilated, and contained only clouded serum. The markings on its floor were but imperfectly to be recognized.

The pons, medulla oblongata, and cerebellum, as well as the remaining parts of the brain, showed nothing abnormal.

The pineal gland and the pituitary body were examined, and showed nothing unusual.

The posterior segments of both eyes were removed for examination, but the retinæ separated so easily from the choroid that nothing very definite was made out with certainty, either of the condition of the retina or of the head of the optic nerves.

There were some hemorrhagic points to be seen, apparently recent. The best view of the disk was obtained in the left eye, and it seemed that its

periphery was elevated, but it could not be said that its outline was irregular, or that there was any thickening of the adjacent portions of the retinal tissues.

The optic trunks on both sides appeared normal, and their sheaths likewise showed no alterations; especially was it noted that no dilatation or abnormal looseness of the external sheath existed at or close to the sclerotic.

I need not say that the diagnosis in this case was one of extreme difficulty. At first the cerebral symptoms were not unnaturally attributed to alcoholism, and even after he came under my care I did not certainly recognize the presence of a more serious lesion than the pneumonia, until the occurrence of spasm of the muscles of the neck. He appeared to be laboring under a low form of inflammation of the lungs,—as in fact the *post-mortem* examination showed that he was,—which, as we all know, is frequently accompanied by just the kind of delirium that was present in this case. The occurrence of contraction of the muscles of the neck, together with the results of the ophthalmoscopic examination, which were fully confirmed a day or two subsequently by Prof. Wm. F. Norris, left no doubt on my mind of the presence of a grave cerebral disease, although it was not possible to decide of what character this was. I felt sure that there was inflammatory action at the base of the brain, for this was rendered certain by the spasm of the muscles of the neck, but was unable to say what had been the starting-point of this inflammation. It was at first suspected that he had been struck on the head; but there were no marks of external injury, and later, when fully able to give an account of himself, he attached no blame to any one, believing, as indeed is most likely to have been the case, that he had suddenly become unconscious while walking in the street. Regarding it as possible that the patient might be syphilitic, I placed him upon large doses of the iodide of potassium, and apparently at first with good results.

It would have been easier to explain the occurrence of the abscess which was found in the right optic thalamus, if it had been possible to obtain from the patient or his friends any history of injury to the head; but this does not seem to have taken place, nor were there any bruises such as would be likely to be caused by a severe fall. It is therefore difficult to explain the presence of the abscess in any other way than by supposing that there was some connection between it and the condition of the right lung, it being well known that cerebral abscess may be associated with and apparently dependent upon chronic disease of the lungs. Messrs. Gull and Sutton, in their article on this subject in Reynolds's System of Medi-

cine, have tabulated seventy-six cases of cerebral abscess, and I shall quote what they have to say in rèard to this connection. "In two of our cases the morbid appearances were such as to indicate acute changes in the lungs, extending, however, over several weeks. In a case that occurred at St. Bartholomew's Hospital, the lung presented the appearance of acute pneumonia in the third stage; but the symptoms indicated that the disease had been going on about two months and ten days.

"In all the other cases which have come under our notice, the morbid changes in the chest had evidently been going on several months, and even years. In one, there was a large suppurating chronic empyema. In another, there was a large cavity at the apex of the right lung, which was firmly adherent to the chest-walls by a thick layer of indurated tissue. Another patient had had flattening and general contraction of the left chest for years, signs of dilated bronchial tubes and of disease in the left lung."

Huguenin also, in his article on Encephalitis in Ziemssen's Cyclopædia of the Practice of Medicine, refers fully to the connection between abscess of the brain and affections of the lungs, saying that "the lung is the organ from which the infection of the brain is most frequently derived. Probably in most of these cases we have to deal with broken-down thromboses of the veins of the lungs. The affections of the lung which may cause metastatic abscess are:

"1. Bronchiectasis with stagnant and putrid secretion.

"2. Bronchiectasis with consecutive gangrene of the lung.

"3. Circumscribed gangrene of the lung in typhoid. Multiple abscesses of the brain.

"4. Abscess of the lungs.

"5. Tuberculosis. Gangrenous tuberculous cavities.

"6. Putrid bronchitis with consecutive pneumonia and gangrene of the lung.

"7. Chronic pneumonia due to the presence of a piece of bone in a bronchus."

Appended is the temperature record.

Date.	Pulse.	Resp.	Temp.	Date.	Pulse.	Resp.	Temp.
March 6, A.M.	72	12	96.5°	March 9, P.M.	94	30	102°
P.M.	73	15	97.5°	" 10, A.M.	84	28	101°
" 7, A.M.	75	19	98.5°	P.M.	90	28	102.5°
P.M.	120	30	101°	" 11, A.M.	90	28	102°
" 8, A.M.	110	32	102°	P.M.	82	26	102.5°
P.M.	110	28	102.5°	" 12, A.M.	86	24	101.5°
" 9, A.M.	90	30	101°	P.M.	80	24	101.5°

Date.	Pulse.	Resp.	Temp.
March 13, A.M.	90	24	103.5°
P.M.	100	26	101.5°
" 14, A.M.	100	24	102°
P.M.	96	24	100°
" 15, A.M.	96	24	101°
P.M.	104	26	103°
" 16, A.M.	90	24	100°
P.M.	84	30	101.5°
" 17, A.M.	86	30	100°
P.M.	100	30	100°
" 18, A.M.	100	24	100°
P.M.	96	28	100°
" 19, A.M.	130	32	103.5°
P.M.	130	32	100.5°
" 20, A.M.	100	38	99°
P.M.	110	28	102°
" 21, A.M.	100	26	98°
P.M.	100	26	99°
" 22, A.M.	106	26	100°
P.M.	100	26	100°
" 23, A.M.	110	24	99.5°
P.M.	120	28	102°
" 24, A.M.	100	36	99°
P.M.	110	30	100.5°
" 25, A.M.	100	24	99.5°
P.M.	100	24	102°
" 26, A.M.	90	24	99°
P.M.	130	28	102°
" 27, A.M.			
P.M.	130	28	102.5°
" 28, A.M.	110	26	100°
P.M.	100	28	101°
" 29, A.M.	110	26	100°
P.M.	110	28	99°
" 30, A.M.	100	26	98.5°
P.M.	110	26	101°
" 31, A.M.	110	26	99°
P.M.	110	26	99.5°

Date.	Pulse.	Resp.	Temp.
April 1, A.M.	100	26	98°
P.M.	100	26	98.5°
" 2, A.M.	80	24	98°
P.M.	100	24	99°
" 3, A.M.	74	24	97.5°
P.M.	96	24	98.5°
" 4, A.M.	90	24	98°
P.M.	80	24	98°
" 5, A.M.	96	24	98.5°
P.M.	96	24	97.5°
" 6, A.M.	94	20	98°
P.M.	96	24	98.5°
" 7, A.M.	100	24	100.5°
P.M.	100	24	100.5°
" 8, A.M.	90	24	98.5°
P.M.	100	24	99°
" 9, A.M.	100	24	98°
P.M.	100	24	98.5°
" 10, A.M.	100	24	98°
P.M.	84	24	99°
" 11, A.M.	80	24	98°
P.M.	100	22	100°
" 12, A.M.	84	20	98°
P.M.	94	28	101.5°
" 13, A.M.	90	24	101.5°
P.M.	100	24	103°
" 14, A.M.	94	24	102°
P.M.	100	24	101.5°
" 15, A.M.	94	24	102°
P.M.	104	24	101.5°
" 16, A.M.	100	24	102°
P.M.	90	24	101.5°
" 17, A.M.	90	24	101.5°
P.M.	90	24	101.5°
" 18, A.M.	80	24	100.5°
P.M.	84	26	101.5°
" 19, A.M.	136	20	103.5°
Died.			

Dr. Wm. Pepper said the case was an exceedingly interesting one, while its origin was, it appears, involved in obscurity. Were it not for the extreme degree of bronchial dilatation, which indicates pulmonary disease of long standing, he would be inclined to suspect, from the lesions of the pulmonary tissue proper, that they were secondary to the cerebral disease rather than antedating it. The absence of softening of tissue, the absence of granulation, and the character of the fluid exuded, are conditions which are suggestive of those quasi-consolidations which we meet in long-standing

pneumogastric irritation which we not unfrequently see come on after old organic lesions of the brain. But the physical signs appear from the very earliest date to have indicated bronchial dilatation, with surrounding hardening of the lung. It is much to be regretted that the patient's history was not obtained, as there was no history of serious lung trouble, but slight cough and expectoration, whereas very soon after the first examination there was evidence of extensive dulness over the posterior part of the chest.

With regard to the relation between pulmonary disease and brain trouble, while he had seen abscess of the brain attending affections of the lung, it was always where suppurative or caseous disease had been going on in the lung-structure itself, and not in the bronchi.

The cases quoted by Dr. Hutchinson show that the latter connection has been observed; but it is undoubtedly very rare.

Dr. Harrison Allen was struck with the fact that at the *post-mortem* examination so much pus was found in localities where we would not expect it. In view of this, it occurred to him that it was better to make examinations of the brain before taking it out of the brain-case, after removal of the skull-cap, to cut down laterally to the ventricles and withdraw the serum by means of a long-nosed syringe. He thought that the method of examination as ordinarily practised must give rise to many erroneous reports of the results of such examinations.

Dr. Hutchinson said that although not unaware of the relation occasionally existing between abscess of the brain and purulent collections in the lungs, he was ignorant, until the occurrence of this case had led him to make some researches into the literature of the subject, of the connection between the former condition and dilatation of the bronchi. He thought a point of considerable interest in the case was the improvement which had taken place under the use of large doses of iodide of potassium, and which had been so marked as fully to confirm him in his opinion that the case was one of syphilitic disease of the brain. The rigidity of the neck and the paralysis of the face passed away, but after three or four days returned; this time, however, affecting the muscles of the right side of the neck. He was at a loss to account for this, because the lymph at the base of the brain was deposited equally over the two sides.

Another point of interest was the absence of anæsthesia at any time in the history of the case; the patient always giving evidence of feeling pain when pricked with a pin. *April 26th*, 1877.

VII.—ORGANS OF SPECIAL SENSE.

1. *Tumor removed from the external auditory meatus.*

By Dr. Carl Seiler.

The tumor which is before the Society was extracted from the external meatus of a patient at the German Eye, Ear, and Throat Infirmary, a few days ago. The circumstances were as follows:

John G. applied to the Infirmary for deafness in the left ear. He stated that he had never been able to hear well with that ear, but that within the last six months the deafness had increased so much that he was unable to hear anything at all on the left side. An examination of the ear showed the external meatus completely filled with a grayish, semi-solid mass of probably hardened secretion. After removal of this mass, which was tightly adherent to the walls of the canal, the white, glistening surface of a tumor made its appearance. This tumor proved, upon further examination with a probe, to be very hard, void of any sensation, and filling the calibre of the canal so completely that it was impossible to slip the thin wire of the écraseur around it, and the point of attachment could not be ascertained. An excision under such circumstances could not be made that day, and so he resorted to cauterization with the solid nitrate of silver, with a hope of contracting the growth sufficiently to ascertain its attachment.

The next day the patient presented himself again at the clinic, and the tumor was found sufficiently contracted to pass the probe all around. It was found to be attached to the upper wall of the external meatus, about midway between the external orifice and the membrana tympani. The écraseur was then applied, and the tumor removed by means of the wire sling without the slightest difficulty. A great mass of hardened secretion was found lying behind, upon removal of which, several small ulcers were seen on the walls of the canal. *October* 12*th*, 1876.

2. *Coffee-bean from the external auditory meatus.*

By Dr. J. Solis Cohen.

This coffee-bean was removed a few years ago from the external auditory meatus of a young lady, who had carried it in that position for more than fifteen years, the only annoying symptoms being hardness of hearing, which increased to deafness for that ear in damp weather, and was sometimes accompanied by severe neuralgic pains. The nervousness of the patient rendered the administration of an anæsthetic necessary in order to remove it with the curette. The specimen shows little change from its long sojourn. There were no permanent unfavorable results from it, the hearing becoming normal soon after its dislodgment.

January 11*th*, 1877.

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3. *Otitis media purulenta, mastoiditis, and pyæmia.*

By Dr. A. S. Reynolds.

J. B., æt. 30 years, male, previous to a recent attack of pleurisy had enjoyed excellent health, except occasional dyspeptic symptoms. There was no history of syphilis; his personal habits were good. General appearance indicative of the lymphatic temperament.

He was admitted to the Presbyterian Hospital, April 11th, 1877, for violent pain in and about the right ear. The patient stated that he had suffered intensely during the preceding two weeks with great pain in the ear; that the auricle had been swollen out from the head, and that the parts about the ear had been greatly congested and swollen; he had not had recently any "cold in the head" or sore throat.

When admitted, there was no displacement of the auricle; there was constant pain in the ear, of a boring and shooting character, the pain darting forward over the right brow; the mastoid region was red and tender on pressure; pain in this region constant. There was a copious discharge from the ear of a thin, amber-colored, semi-transparent fluid, having a very offensive odor.

The intellect of patient was clear; headache confined to the right side, —dull and aching over the mastoid, acute and lancinating over the temporal region; pupils normal; tongue clean; appetite good; no febrile reaction.

Inspection of the ear revealed perforation, *i.e.*, destruction of the mem-

brana tympani; Eustachian tube pervious to Valsalva's inflation; hearing reduced to a few inches for the voice and immediate approximation for the watch.

There was at no time any œdema of the face or neck, or any evidence of implication of the cervical veins or of the cranial sinuses.

Free leeching over the mastoid gave no relief to the pain, which continued to increase. Twenty-four hours later the face was flushed, tongue coated, slight febrile reaction, pain intense; and, as there was no abatement of these symptoms, the mastoid process was perforated, April 14th, by Dr. C. H. Burnett. As there seemed to be some hypertrophy of the process, the perforation was made about half an inch lower, *i.e.*, nearer the tip, than is usual. The incision made was one-quarter inch behind the auricle and one and one-quarter inches long; the surface of the mastoid appeared normal; the periosteum was dissected up, and the outer wall perforated with a conical drill at a point about one-half inch above the tip of the mastoid. The mastoid cells were reached at a depth of one-fifth of an inch, and a small amount of cheesy pus was removed with the drill. A small branch of the posterior auricular artery was cut and ligated. The following day there was less pain in the ear; pain in forehead and right brow gone.

Forty-eight hours after operation there was free superficial suppuration; complained of stiffness of right side of neck. There was slight fever, increasing until evening of fifth day, when the temperature was 102⅔°, pulse 108, but subsiding gradually until the tenth day, when the temperature was 98⅗°, pulse 88. On the fifth day there was some photophobia, and he complained that any noise excited headache.

From this time the discharge from the ear grew less and became purulent, closely resembling that from the wound; the incision of soft parts began to heal, the perforation in the bone persisting.

He improved steadily until the 24th of April, ten days after mastoid perforation, when he was allowed to be out of bed, and that evening complained of nausea and pain in region of liver; temperature rising, reaching 104⅗° during the evening of April 25th, when he had a violent chill and complained of an intense frontal headache; pulse 116, full and bounding, tongue dry and coated, bowels open.

From this time there was constant nausea, matters vomited being ingesta and mucus, tinged with bile; pain in right hypochondriac region increased, with tenderness on pressure. He was delirious at times after the 27th; he had hiccough; the pulse became weaker and more rapid, and respiration quick and jerking. Died April 30th.

Post-mortem examination, made fifteen hours after death.—Incision made from top of sternum to pubes; the abdominal cavity first laid open; the omentum *in situ propria*, but darkened by venous injection, and at its upper dextral side thickly studded with flakes of recent lymph. The stomach, of normal size, containing about two ounces of gastric juice, was coated externally by patches of lymph over the fundus, and at its pyloric end was adherent to the under surface of the liver. The duodenum was so firmly adherent to contiguous viscera and so softened that it was torn in attempting to remove it. The gall-bladder contained about an ounce, which, being pressed out through the seemingly pervious duct, presented itself as a greenish-red frothy bile. The liver, externally, was covered with yellow spots (peripheral abscesses) varying in size from one-quarter to one inch in diameter. The upper surface of the liver was free; the under surface adherent to the stomach. The peritoneum of the hypochondriac and epigastric regions was covered by patches of lymph, all the viscera of these regions being matted together. The spleen normal, excepting slight adhesions to the diaphragm; contained no abscesses.

The kidneys were normal; the right lung adherent over its whole surface by recent pleuritic adhesions; the left lung normal, excepting the presence of a small abscess on the outer side of the lower lobe, of about one-half inch in diameter and surrounded by a hardened zone, the whole mass being about one and one-half inches in diameter.

The heart had on the exterior of the left ventricle a patch of lymph two inches long and an inch wide. The sac contained about four ounces of a clear serous fluid.

The liver was found to be perfectly riddled throughout with abscesses.

The point of incision was found to have partly healed from below upward, about three-quarters of an inch remaining open; from this point there was no external evidence of implication of any contiguous tissue.

The brain was seemingly normal, and there was no evidence of implication of the cranial sinuses.

The cerebral surface of the temporal bone of the affected side was slightly darkened, and the dura mater of this side less firmly adherent than over the normal side.

The tympanic cavity and mastoid cells were filled with a cheesy cholesteatomatous mass; ossicles present; membrana tympani gone. There was great hyperostosis of the outer table of the mastoid portion; it was one-half inch thick at a point three-quarters of an inch behind the external auditory meatus. There was no necrosis of any part of the temporal bone; there was no implication of the internal ear, so far as could be

ascertained. There was no sign of phlebitis, nor of thrombosis in the sinuses of the brain, nor in any of the veins leading from the tympanum.

The cheesy mass in the mastoid cells was lying against the mastoid surface of the bony canal in which runs the lateral sinus; but there was not the slightest change in the bony structure of the canal, nor was there any diseased spot in the cerebral surface of the temporal.

So far as the disease of the ear and the temporal bone is concerned, the case must be regarded as one of chronic purulent inflammation of the tympanum and mastoid cells, leading to a clogging of the latter with a cholesteatomatous mass, and to a hyperostosis of the mastoid portion of the temporal bone. The pyæmic embolism may have been due to the escape of some of the epithelial and purulent débris from the tympanum into the circulation.

Dr. Chas. H. Burnett said there were several features of interest in the case. Of course his chief interest was in the success of the operation. The incision he made was behind the ear and reached the bone at the thickness of the skin. The external table was healthy, and the mastoid process was perforated by means of a conical drill. The operation as a mastoid perforation he thought might be regarded as successful. The man had so far recovered that it was thought to be a case fit for the infirmary, and he was about being discharged from the hospital, when he was suddenly attacked with nausea and the other symptoms detailed in the history of the case.

He died of pyæmia due either to washing away of some purulent débris from the tympanum into the circulation or from the small abscess of the neck; but, although in the latter there had been pain and it had attracted attention during life, the man was apparently, in every sense of the word, a well man when he was attacked with nausea and chill. It is well known that these cases of chronic suppuration of the ear terminate in pyæmia, but more frequently from meningitis and thrombosis in consequence of direct communication with the meninges. He recalled the case of a boy in which there was a clot extending into the jugular vein, and the boy died of well-marked symptoms of pyæmia.

Dr. John Guitéras asked whether simple imflammation of the diploë of the mastoid process could cause this trouble.

Dr. Burnett said certainly this could be the case, and doubtless is the case in many instances, although, as a rule, observers are not obliged to look for the cause in the inflammation of the diploë, sufficient cause being found in the inflammation of the brain-substance. It is interesting to compare the thickness of the outer table in disease with that of health.

Schwartze says that the outer table is one to three millimetres thick ($\frac{1}{25}$ to $\frac{3}{25}$ of an inch). Green, of Boston, in writing of hyperostosis of the mastoid, speaks of a thickness of the outer table of one-quarter of an inch as abnormal. In four cases of abnormal thickening the thinnest was one-quarter of an inch and the thickest over one-half inch. The normal bone presented for comparison is evidently of smaller size than the diseased bone exhibited, which was one-half inch thick.

Dr. Burnett thought it could be stated somewhat in this way. In pyæmia from mastoid disease there is generally found abscess in the brain, or some cerebral symptoms which would, of course, become prominent, as headache, dulness of intellect, convulsions, etc., and the case has a rapid and fatal termination. In a case he saw a short time ago, in which there was no cerebral abscess, the symptoms were of the usual lingering character.

Dr. Henry said it was probable the *physical* properties of inflammatory products might be of influence in the production of pyæmia. In the case under consideration these were of a cheesy consistence, and the pyæmia was probably caused by the entrance into the lymphatics of small solid particles, which, in their onward course, entered the blood-vessels and obstructed the capillaries of the organs involved, and so gave rise to the abscesses. To attribute them to an inflammation of the lining membrane of a vein or blood-sinus affords a far less plausible explanation, as such an inflammation resulting in increased production of leucocytes would rather give rise to a condition of leukæmia.

Dr. G. C. Harlan thought that, though there was perhaps little doubt in this case of the connection between the ear-disease and the pyæmia, it was by no means positively made out. All the sinuses and veins in the neighborhood of the ear are reported as perfectly healthy; there was no sign of phlebitis, which is usually the immediate cause of pyæmia in such cases. The chances of disease of the tympanum leading to fatal complications are much diminished by a free exit for discharge through the external meatus, as in this case. It not unfrequently happens that a purulent aural catarrh that has been for many years little more than an annoyance becomes the direct cause of death in consequence of the obstruction of the meatus by the growth of a polypus. This was well illustrated by the case of a patient whose temporal bone he had exhibited to the Society several years ago. This patient, after having had otorrhœa for a long time, finally died of cerebral abscess. On the removal of a polypus there had been a gush of pent-up pus from behind it. The roof of the tympanum was found to be eroded. The condition of the mastoid process was in contrast to that

just described by Dr. Burnett. Though the patient was 23 years of age, and had been the subject of aural catarrh since early childhood, there was not only no hyperostosis of the mastoid, but a very deficient development; it was in an almost rudimentary condition, and could not have been punctured with any degree of safety. *May* 10*th*, 1877.

"The committee appointed to examine the temporal bone presented with other specimens, from a case of pyæmia, by Dr. Reynolds, of the Presbyterian Hospital, would report that they find numerous evidences of extensive chronic disease of the bone. These evidences consist in enormous thickening of the external wall of the mastoid portion of the bone, amounting to six or seven millimetres, whereas the inner wall was very much thinned, and where in contact with the sigmoid sinus presented numerous morbid perforations. The base of the mastoid cavity was also very much thinned, and the cavity itself gave ample evidence of having been packed in every possible point with a cheesy mass of epithelial and purulent débris.

"The committee are in entire accord that the disease of the temporal bone was the cause of the pyæmia, but they are unable to indicate positively the path whereby the embolus entered the circulation. They regard it as highly probable, however, that it occurred by the way of the lateral sinus, as there was enough disease in the sigmoid groove to warrant such a supposition.

(Signed)

"C. H. Burnett,
"Harrison Allen,
"G. W. C. Harlan."

October 1*st*, 1877.

VIII.—TUMORS NOT OTHERWISE CLASSIFIABLE.

1. *Tumor of the neck.*

By Dr. Louis Starr, for Dr. B. J. Rudderow. Operation by Dr. W. P. Janney.

M. S., æt. 21, single, having a healthy family history, first noticed the growth, which she attributed to an injury received while playing with some of her companions, seven years ago. It was then about the size of a small hickory-nut, painless, slightly movable, and hard. In this condition it remained until last March, when it commenced to grow with great rapidity. Four months later she began to feel sharp, shooting pains through the tumor. From the middle of September to the day of the operation, October 19th, 1876, the patient had a chill followed by fever every day; there were, however, symptoms of phthisis present. Before the operation the following observations were made: tumor superficially seated on left side of the neck, in a space bounded in front by the sterno-cleido-mastoid muscle, below by the clavicle and spine of the scapula, and behind by the cervical vertebræ; it is nodulated, movable, and at its lower edge there is a bright spot of inflammation about the size of a silver dollar; there is no enlargement of the neighboring glands. After the patient was well under the influence of ether, a simple elliptical incision was made and the mass torn from its bed. The edges of the wound were then brought together and a dry dressing applied. Since the operation there has been no return of the hectic fever, and the patient has done well in every respect. *October 26th*, 1876.

Report of the Committee on Morbid Growths:

"The tumor presented by Dr. Starr as removed from the neck is a simple lipoma, presenting at some points considerable small-celled infiltration of the connective tissue." *November 9th*, 1876.

2. *Carcinoma recurring in the vicinity of a cicatrix left after excision of true epithelioma in the axilla.*

By Dr. Richard A. Cleemann.

These two specimens are examples of different forms of epithelioma: they were removed from the same patient, the one with the counsel and assistance of Drs. D. Hayes Agnew and C. T. Hunter, on April 2d, 1875, and the other after an interval of twenty-one months, a week ago (January 3d, 1877), by Dr. Agnew, aided by Dr. Hunter and myself. The growth, for the removal of which the first operation was performed, had been noticed for the first time four years before its excision. The patient, being then abroad, in Brussels, had consulted there a medical man, who had prescribed some application, which she was under the impression had removed the difficulty: after a while, however, she perceived the "lump" again, and for some months previous to the operation it had been growing more rapidly in size. At the time of its removal it was situated in the left axilla, rather to its anterior border, imbedded, as it were, in the skin and immediately subjacent tissue, rising above the surrounding surface, with its base extending beneath the whole mass nearly an inch in thickness; in contour it was generally circular, about one and a half inches in diameter, and felt of firm consistence; its surface was uneven, "bossilated," the skin covering it smooth and florid in color over a third of its extent, over the rest natural in appearance or merging into various degrees of the darker hue; in an angle of the little eminences, from a "crack," a small quantity of bloody-looking fluid exuded, which trickled over the side when the tumor was handled. There was an unpleasant tingling sensation occasionally complained of by the patient, but no positive pain in the growth. The sufferer is a lady, about 70 years of age, of delicate appearance, having been considered all her life as having weak "lungs;" but she is said to come of a long-lived stock, and seems to be possessed of strong vitality. The lower portion of the wound caused by the extirpation of the growth healed without difficulty or delay, but a slough formed in the cellular tissue beyond the upper part, which did not entirely separate until the beginning of the fourth week after excision; seven weeks more elapsed before the patient could declare herself as feeling in perfect health, with only a superficial linear ulcer in the flexure of the axilla remaining; this latter was three weeks longer in cicatrizing, making the whole period of recovery about three months.

Subsequently the patient enjoyed excellent health, but in April of last

year, twelve months after the first operation, she observed another "lump" in the axilla. This I examined in the following June: it was then about the size of a hazel-nut, of stony hardness, round, and loose beneath the skin, not connected with the cicatrix left by the excision of the original tumor, but somewhat anterior to its upper part; six months afterwards the growth had reached the size of half a hen-egg, was still hard, and had become somewhat tender; it was situated just along and under the edge of the great pectoral muscle forming the anterior fold of the axilla. When this tumor was removed it was found to be composed of a half-dozen hard roundish bodies of varying sizes from that of a split pea up to that of a marble: these were so closely apposed to each other as to have seemed to constitute but a single mass; they resembled a "pleiad" of enlarged lymphatic glands. The adjacent border of the left mammary gland to which the growth extended was removed with the morbid tissue, and is easily recognized in the specimen.

Among the points of interest suggested by these specimens and their history, I will call attention to three. 1. The axilla is considered a rare location for epithelioma. Yet there is one factor recognized as playing an important part in the production of this growth, which might be expected to be present in this situation, a *repeated* or *constant irritation*, arising from the retained and therefore decomposing secretion of the large sweat-glands. The thickness of the tumor and the unchanged appearance of the greater part of the skin covering it lead me to infer that the morbid process first invaded these appendages of the integument, and afterwards involved the surface. 2. The second growth removed was not in a line between the position of the first and the root of the neck, which is the course of the lymphatic having an anatomical relation to the primary seat of the disease, but was situated rather downwards and forward towards the mammary gland. Such a location suggests to me that the latter development was due to the rather wide-spread infiltration of tissue with morbid elements which may surround epitheliomata, a zone the extent of which our naked senses cannot justly estimate, since to the touch and unaided eye the adjacent structures appear perfectly normal. That a recurrence of the growth did not show itself in what would seem the natural direction was due perhaps to the sloughing which took place there. 3. Was the reputed disappearance of the tumor in the first instance an error of observation? I think the morbid mass may have decreased in size at that time, giving rise to the impression of cure, such diminution having been due to the resolution of a temporary inflammatory engorgement; for I have now under observation a tumor which I believe from history and gross appear-

ances to be epithelioma, no opportunity having been afforded for microscopical examination, in which such a process has recurred; and the same is known to be true of other morbid growths. *January 11th*, 1877.

Report of the Committee on Morbid Growths:

"The specimen of morbid cutaneous new formation presented by Dr. Cleemann, and referred to the Committee on Morbid Growths, shows upon microscopical examination great enlargement of the papillæ, and the projection of pegs composed of epithelial cells into the subcutaneous cellular tissue; therefore, an epithelioma.

"The subcutaneous nodule also presented by Dr. Cleemann, upon microscopical examination, exhibits in places collections of large irregularly-shaped epithelial cells, placed in alveoli; the walls of the alveoli composed of dense fibrous tissue. Upon removing the cells by brushing a thin section, the alveolar arrangement of the fibrous tissue became quite evident. Lymphadenoid tissue is also seen in the section. Having such a structure, the new formation may be considered a carcinomatous infiltration of a lymphatic gland, variety scirrhus." *February 8th*, 1877.

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3. *A cutaneous proliferous (sebaceous) cyst.*

By Dr. John Ashhurst, Jr.

The growth, the size of a filbert, was removed from the orbital region of a boy 9 years of age. An unsuccessful attempt had been made by another surgeon to effect a cure by the injection of a solution of carbolic acid. The cyst appeared to have very thick walls, no doubt from the accumulation of epithelial débris in its interior, and could only be removed by careful dissection, being firmly adherent to the periosteum. Dr. Ashhurst referred to the importance of early excision in the case of these orbital cysts (which were usually congenital), as if neglected they sometimes led to erosion or even perforation of the bone, and might prove fatal by inducing meningeal or cerebral inflammation.

January 25th, 1877.

4. *Encephaloid cancer of the lymphatic glands of the neck.*

By Dr. R. A. Cleemann.

Twenty-eight months ago a woman of nervous temperament, 55 years of age, consulted me in regard to a small pendulous growth on the left side of the face, which had existed there several years. Being annoyed by the resulting disfigurement, she had lately tied a ligature about it, a measure which had led to its partial strangulation. I separated what remained of the pedicle, and the little ulcer that was left healed kindly. A year subsequently (sixteen months ago) she showed me an ovoid nodule, situated just behind the angle of the jaw on the same side occupied by the former growth. She stated that this already existed at the time the first little tumor was removed; it was then a small "lump," rolling under the skin, and gave her no pain, but had since grown much larger, and within a short period had caused her so much suffering as to destroy her night's rest. The pain was described as extending over the whole side of the head and into the ear. My examination revealed a movable mass of the shape mentioned above, hard to the touch, and apparently tender. I estimated it to be nearly two inches in its longer, and about one and one-half inches in its shorter, diameter. The skin over it was reddened, an effect, perhaps, of the hot poultices she had been applying. Two months afterwards (fourteen months ago) the tumor had diminished to less than one-half the last-mentioned size. It was still hard, but was now more irregular in contour, as though separating into lobules. The patient, on being questioned as to the fact, said she had noticed a tendency in the "lump" to increase and then diminish. A week ago she consented to have the growth removed. It had grown larger again, and was the seat of lancinating pains of great severity. Exposure to the cold irritated it, as well as the contact of woollen wrappings. It made her life miserable. The skin over it had now become closely adherent, and was of a deepened hue; its surface was obscurely cleft and uneven. It seemed to extend deeply behind the maxilla.

The tumor, as removed, is seen to be about the size and somewhat the shape of an English walnut, one and one-fourth inches in its longer, and about three-fourths of an inch in its shorter, diameter. Its seat was in the subcutaneous cellular tissue, but it had encroached upon the parotid gland, so that it was thought prudent to excise a portion of this along with it. Its structure, like a congeries of enlarged lymphatic glands, in gross appearance is very similar to that of a firm encephaloid growth which

I presented to the Society a short time ago, the latter being recurrent to a mixed encephaloid and epitheliomatous tumor of the integument.

Whether there is any connection to be traced between this morbid mass and the little pendulous tumor of the cheek is not certain. If the patient is correct in saying that they were coexistent, it seems likely that an effect of the strangulation was to enlarge the affected glands by simple irritation, and that a cancerous process was afterwards developed there. But if there was an interval between the appearance of the growths, then it is more probable there was an element of malignancy in the sphacelated tumor of the cheek. An interesting feature, as obscuring the diagnosis of the nature of the growth, was the variation in its dimensions clearly distinguished by me. *March*, 1877.

Report of the Committee on Morbid Growths:

"A microscopical examination of the specimen presented by Dr. Cleemann shows a circumscribed collection of epithelial cells, arranged in alveoli. The stroma constituting the walls of the alveoli is very scanty in proportion to the amount of cellular elements. The new formation may be classed among the carcinomata, variety encephaloid."

March 22d, 1877.

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5. *Fibrous tumor of the left upper jaw which had undergone partial calcareous degeneration.*

By Dr. J. Ewing Mears.

The specimens were removed from a patient æt. 23 years, from the interior of the State, kindly brought to me by Dr. Miller, of Altoona.

The growth first made its appearance thirteen years since, in the region of the first molar tooth, which was carious and caused much pain. The offending tooth was extracted without causing cessation in the growth of the tumor. A year after, the second bicuspid tooth became loose, and was removed. Since this time the growth has steadily and slowly increased, until it has reached the size of a large orange. It has been free from pain, and has shown no tendency to undergo ulceration. Two years ago he wounded it with a coal-pick, when he was working in the coal-mines. Serious hemorrhage did not follow.

On examination, a large firm mass was seen occupying the entire external surface of the left superior maxilla, extending back to the tuberosity. The surface was smooth, and so hard as to give the impression

that the growth was osseous in character. Posteriorly a point was found where the surface was elastic. The tumor had extended upwards so as to partially close the left eye by forcing the lower lid over the globe. The nose was deflected to the right of the median line, and the left nostril was dilated. The corner of the mouth on the left side drooped.

Inspection of the oral cavity showed the left buccal space filled with the growth. The alveolar process was surrounded by the tumor, very much thickened, and having imbedded in it the remaining teeth. The left half of the hard palate was covered by a dense layer of tissue, forming part of the tumor. The posterior nares and pharynx were free, as well as the entire left nostril.

After the examination the opinion was expressed that the tumor was fibrous in character, and that calcareous degeneration had taken place. Its removal was advised, and consented to by the patient. In order to divide the facial artery and nerve where the branches were small, the incision recommended by the late Sir Wm. Fergusson was employed. By this plan the tumor was fully exposed and separated from its attachment to the bone by the chisel. At a subsequent operation the alveolar process with the portion of the growth overlying the hard palate was removed, leaving but a small part of the bone remaining. Considerable suppuration followed, and continued for some time. The patient returned home before it had ceased. On examining the mass of the tumor which was attached to the external surface of the jaw, it was found to be covered by a very thin, delicate lamina of bone, which gave to it the hardness felt before removal. This layer could be easily stripped off, exposing the dense fibrous tissue beneath. The central portion contained a large mass of calcareous matter, and throughout the whole tumor were found calcareous particles. It was evident that the growth had taken its origin from the inner surface of the periosteum, beginning in that part of this membrane which covered the alveolar process, the exciting cause being in all probability the irritation provoked by the carious tooth. *June 14th*, 1877.

Report of the Committee on Morbid Growths:

"The new formation presented by Dr. Mears, and referred to the Committee on Morbid Growths, by a microscopical examination is seen to consist of spindle-shaped cells, with a scanty fibrillar connective-tissue intercellular substance; here and there throughout the growth are seen points of calcareous granular matter. The formation may be considered as a peripheral osteo-sarcoma undergoing calcareous infiltration."

June 28th, 1877.

IX.—SPECIMENS FROM THE LOWER ANIMALS.

Obstruction of the œsophagus of a dog by a large bolus of meat; death by starvation.

By Dr. O. H. Allis.

The bolus presented, measuring four inches long and one inch in thickness, was removed *post-mortem* from the œsophagus of a dog. The animal died of starvation in consequence of the obstruction. Some days before death it was observed to become more and more emaciated, but the cause was not suspected until an examination was made after death.

May 10*th*, 1877.

X.—MISCELLANEOUS.

1. *Abortion of twins.*

By Dr. James C. Wilson, for Dr. H. G. Landis, of Niles, Ohio.

Mrs. J., æt. 35, only child born in April, 1875. In October, 1875, the menses reappeared, and were regular until April, 1876, at which time they ceased. She supposed herself to be pregnant until October, when, finding no other sign of pregnancy, she abandoned the idea. From the 1st of October there was an occasional show of blood ("just enough to stain a napkin") occurring at irregular intervals and continuing for a week or more at a time. For some time she had been feeling in excellent health, and just before Christmas she was examined by an experienced practitioner, who pronounced her not pregnant. On January 1st, 1877, she helped to prepare a dinner, received company, and felt unusually well. At noon a decided flow of blood occurred, continuing throughout the day. At 6 P.M., feeling slight pains, she took a seitz-bath. At 8 P.M. I was summoned to her bedside, and found the accompanying specimen lying in the bed, the recent appearance of which was as follows: Fœtus No. 1 was five inches in length, and was enclosed in unbroken membranes containing about six ounces of liquor amnii; to it pertained a placenta of comparatively large size. Fœtus No. 2 was three and three-quarters of an inch long, enveloped in membranes from which the water had escaped. Its umbilical vessels ramify on the membranes and approach the edge only of the placenta, thus accounting for its apparently inferior development. This inferiority is, however, only apparent, since No. 2 has a well-developed anus and the beginning female genital fissure, while the breech of No. 1 is absolutely bare. About No. 1 were several masses looking like coagulated lymph and at places so adherent as to resemble vegetative growths, concerning which I would ask the opinion of a committee. The placenta had the gross appearance of extensive fatty degeneration. Both fœtuses had evidently been dead for some time, and their color is not materially changed by the alcohol in which they are immersed.

The point of especial interest is the unequal development, in which quantity and quality appear to be in inverse ratio. I would also offer the

opinion that we have here a case of double-yolked ovum, in which the allantois of one was projected against the decidua vera, or rather against a part of the ovum which subsequently was brought in juxtaposition with that membrane; while the allantois of No. 2 fell in relation with the decidua reflexa, and therefore failed to develop a placenta. *January 25th*, 1877.

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2. *Extensive fatty degeneration of muscle.*

By Dr. H. Lenox Hodge.

The specimens are sections of the gastrocnemius and soleus muscles, removed from a subject in the dissecting-rooms of the University. There is no ante-mortem history of the case. The limb, however, had probably been little used on account of a club-foot which appeared to have existed congenitally.

The sections have the appearance of pure fat in the form of the muscles, and when placed in ether undergo solution and only some shreds of fibrous tissue remain undissolved. *January 25th*, 1877.

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3. *Freezing microtome.*

By Dr. Morris Longstreth.

The freezing microtome exhibited is that described on p. 164 of Prof. Wm. Rutherford's second edition of his "Outlines of Practical Histology."

Dr. James Tyson asked Dr. Longstreth whether he had found sections made from tissues hardened by freezing exhibit appearances more satisfactory, particularly as regards the relations of adjacent structures to each other, than those made from sections hardened by alcohol and chromic acid and its compounds.

Dr. Longstreth said he favored the results obtained from frozen tissues, all parts of the section showing well. He said that it had been formerly offered as an objection to the freezing-process for cutting microscopic sections, that the cells were ruptured by the change of density and damaged in appearance. This effect he had found not to be the case. It is claimed by Prof. Rutherford that the proper relations of the component parts of a section of tissue are better preserved than by the other methods of prepar-

ing tissues for section-cutting. If one calls to mind the long and delicate process usually employed in the treatment of sections after hardening in chromic acid or Müller's fluid,—the many transfers from one reagent to another, with the successive washings,—it is easy to comprehend that this freezing-method is almost free from the danger of disturbing the relations of the parts of the section. The application of regeants, etc., can be performed on the glass slide on which the section has been placed while yet frozen.

The embedding mixture in which the specimen is frozen, recommended by Prof. Rutherford, has been found entirely suitable and serves completely the purpose. It is composed of 5 oz. gum acacia, 120m. spts. camphor, and 10 oz. water. (Br. Ph.)

Dr. Jos. G. Richardson preferred the results from cutting of frozen tissues not only as regards cellular elements, but also of denser structures. He thought the granular and brittle conditions which result from hardening in chromic acid often objectionable. He had employed the method recommended by Klein several years ago, in which the specimen was pinned to a cork enclosed in a tin box and the latter immersed in a freezing-mixture, and was much impressed with the superiority of the sections thus obtained, especially as respects the cellular structures.

The method certainly facilitates the making of thin sections in cases where an immediate examination is necessary, as is sometimes the case.

Dr. Longstreth further remarked that, in addition to the advantages derived from the use of the freezing microtome already mentioned, in studying sections as a whole and discovering the relations of stroma, cells, etc., the instrument allowed of a rapid method of examining the fibrous portions alone. Other methods of hardening do not act on the different constituents of a tissue alike: one hardening solution, whilst applicable to the preservation of cells and their subsequent study, is not favorable for the fibres; again, with other hardening methods it is oftentimes difficult to remove the cell-elements by pencilling without working damage to the fibrous portions, the hardening process causing the cells to adhere with great firmness. The freezing-method obviates such difficulties. A difficulty might arise, however, in the treatment of a frozen section, from the great delicacy of the stroma of the tissue when submitted to the pencilling process. This difficulty he had overcome by immersing the section in alcohol for a short time, until sufficiently hardened to bear the pencilling without damage. Other appropriate fluids could be substituted for alcohol if desirable. *February 8th*, 1877.

4. *Post-sternal abscess.*

By Dr. W. W. Keen.

J. G., æt. 35, baker, was admitted to St. Mary's Hospital July 11th, 1876, under the care of Dr. S. H. Griffith, the attending physician. He had fever, anorexia, and sleeplessness, which persisted apparently without assignable cause. He complained of no pain in the chest. In about two weeks a swelling appeared at the right edge of the sternum at the second rib, not painful, but with only a sense of fulness. It was hard and small. After poulticing for ten days, fluctuation was evident, and it was opened. In the pus a wave was seen synchronous with the heart-impulse, showing some mediastinal connection, and the diagnosis of post-sternal abscess was made. His general condition at once improved in every respect, steadily though slowly, under good diet, tonics, and mild stimulation. Early in September he was walking out daily. The abscess had at first discharged freely, and had nearly filled up by granulations. About September 20th he took a long walk down town to get some clothes, and returned utterly exhausted. He went to bed, the fever returned, the granulations melted away, night-sweats set in, and his general condition was very bad. He came under my care October 7th. I found his general condition as stated, temperature 102° to 105° morning and evening, pulse 120 to 140. At the junction of the manubrium and gladiolus, which were entirely separated about an inch from each other, was an oval opening two inches wide by one and a half inches perpendicularly and one and a half inches deep. At the bottom, which was a smooth membrane, the aortic pulsations could be both seen and felt. Exploration carefully made by the finger was not painful. The finger passed behind the sternum, and showed a cavity extending about an inch laterally beyond the opening, upwards to the top of the sternum and downwards to the ensiform cartilage. The tissues in front of the sternum were also detached from the bones. Both pieces of the sternum were carious, and small pieces of bone were constantly coming away. Both second ribs were detached, and could be seen and felt, the right one rather the better, since the opening was slightly more to the right than to the left.

He was very feeble, and the prognosis was very bad. In spite of careful regulation of his diet, liberal stimulation, and the administration of tonics in full doses, he gradually failed, and died October 18th. The local treatment was directed solely with a view to keep the parts clean and stimulate the granulations, but, except in the matter of cleanliness, it failed entirely to be of benefit.

The *post-mortem* examination revealed nothing worthy of note beyond the abscess described. The heart and pericardium were not diseased. The only assignable cause for the abscess was that in his occupation he constantly carried barrels of flour and ashes up and down, the edges of which he generally rested on his chest; yet he was never conscious of any injury received by so doing. *February 22d*, 1877.

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5. *An arm amputated after diffuse cellulitis.*

By Dr. W. W. Keen.

M. C., æt. 53, Irishman, miner, blanched by thirty years of almost absolutely sunless life. In 1867 was struck on the left elbow by a piece of coal from a blast. This wound never healed. Anchylosis of the elbow resulted, and over the olecranon the bone was exposed on a level with the skin over a space about one-half inch in diameter. For six months there was considerable inflammation of the tissues of the arm and forearm, with abscesses. In December, 1875, the same arm was squeezed between a coal-wagon and a heavy timber. Diffuse inflammation soon followed, from the elbow down, with enormous swelling and abscesses everywhere. In this condition he entered St. Mary's Hospital, October 18th, 1876. No dead bone, however, was detected on probing. Slight power of pronation existed, but no flexion. A short effort was made to save the limb, but, finding it of no avail, amputation, by two flaps, was done October 28th, 1876, at the middle of the humerus. Esmarch's apparatus was used successfully, only the bandage and no tubing being used, after the plan suggested by myself. Three ligatures were applied. On the seventeenth and twentieth days two ligatures came away. The one on the brachial artery resisted all proper force, and after forty days I attached to it a bag containing one ounce of shot, which brought it away in two days. He was discharged, well, December 9th, 1876. On examining the elbow, entire bony anchylosis existed between the humerus and ulna, but the radio-humeral articulation was entirely healthy, apparently, from the slight pronation which was preserved. The exposed olecranon was not diseased beyond the exposure. *February 22d*, 1877.

6. *A needle found post-mortem within the cranium.*

By Dr. H. Lenox Hodge.

Upon removing the calvaria of a subject in the anatomical rooms of the University of Pennsylvania, a sewing-needle of medium size was found lying on the right hemisphere of the brain, nearly parallel to the superior longitudinal sinus, about an inch distant from it, and about an inch and a half behind the fronto-parietal suture. The point and the eye of the needle were both unbroken. The point was directed backwards. The needle was much oxidized, and attached to the arachnoid surface of the dura mater by old bands of lymph near the larger extremity of the needle.

No history of the cadaver, an adult male, could be obtained.

The needle appears to have given rise to no important changes, and had no apparent connection with the cause of death. The man seems to have died of phthisis.

It is a matter of interest how the needle reached this position. Other methods might be suggested, but it is most probable that it entered the anterior fontanelle during infancy, and thus passed to the place where it was found.

Dr. Sinkler thought it most likely that it had entered the fontanelle during infancy, as by no muscular contraction could it obtain the position in which it was found.

Dr. F. P. Henry said his experience went to show that instead of corrosion of needles long buried in animal tissue, there was an actual addition of new material. A short time ago he had removed with great difficulty a needle from the biceps muscle of a girl. It was three times the thickness of an ordinary needle, very rough and uneven, and covered with a hard mineral-like deposit, to which was owing the increase in thickness.

Dr. Wilson recited the case of a sewing-girl who was said to have swallowed a paper of needles, many of which were removed from different parts of the body. These were all smooth, but blackened and tarnished. He had recently removed from the foot of a boy a needle which had been imbedded four months. It was simply tarnished.

Dr. Sinkler had removed a needle from a foot after it had been there imbedded for three months. It was smooth and blackened, but not corroded. He placed it in his pocket-book, and on examining it after a few weeks he observed that the rusting process had taken place.

Dr. Richard A. Cleemann said that he had made use of the fact that a needle after being imbedded in tissue for a certain length of time becomes

tarnished. He had extracted a fragment of needle, and was anxious to determine whether it was all that entered the foot. The broken end was tarnished. He fractured the needle, and, observing that the fractured ends presented the usual steel-like lustre, he concluded that he had removed the whole fragment. Had he broken it off, the fractured end of the removed portion would have been bright. *April 12th*, 1877.

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7. *The causative relation existing between the anatomical arrangement of the tissues at various ages, and their morbid growths.*

By Dr. Charles B. Nancrede.

The etiology of morbid growths is of great interest, I conceive, to every one in this Society, but more especially to its surgical members, since they are oftener called upon to deal with such. It seems as yet beyond our power of explanation why such morbid growths should occur, and all will agree with me in the desirability of such knowledge, if attainable. I offer this paper in hopes that others who have larger opportunities of observation will be induced to investigate as to the truth of my suggestions, and either demonstrate or disprove them.

I shall only consider in this paper the pathology of the malignant morbid growths.

In the past two or three decades many diseases have been removed, by our improved methods of investigation, from the category of functional to that of organic affections, and "specific actions" are less resorted to than formerly to explain pathological processes. I think, therefore, that past experience has proved how illogical it is to assume some "specific" action when our inadequate means of investigation fail to give a ready explanation of morbid phenomena. I say our past experience, since it has been demonstrated that organic changes exist in supposed functional diseases, which had previously eluded our imperfect investigations.

Let me here state my belief in the purely local origin of all primary malignant growths, being exceeding sceptical about special conditions of constitutional origin, believing that more advanced knowledge will explain them better, on mere anatomical grounds. I have not the time, nor is this the place, to give a history of pathological histology; but if I did so, instances as surprising as the anatomical explanation of the etiology of tumors would present themselves.

I believe that there has been too great neglect of the study of a most

important portion of the tissues of morbid growths, viz., their vascular supply as compared with that of the normal tissues.

According to His and Waldeyer, by observing the first differentiation of the cells of the ovum into their three layers, we see that the intermediary nutritive apparatus arises not from a splitting-off from the inner and outer organo-poietic layers, but from a layer which grows in between them from the germinal area. When we consider that from this are formed the vascular and connective-tissue systems, and that they are distinct in their origin from the organs themselves, we can see that this parentage may have an important bearing on the pathology of morbid growths. Again, let me advert to the important fact that in after-life the tissues show most distinctly their parentage, and only growths resembling tissues similar to those normally formed by the ovular layer from which the diseased tissue sprang are ever found in it primarily.

If, therefore, a connective tissue be induced to take on morbid formative action, only a growth resembling such as are normally formed by the middle germinal layer will result. If, on the other hand, an epithelial tissue be irritated, not a connective tissue but an epithelial will result, or at least one such as is formed from either the inner or outer layer.

As long, therefore, as these two constituents of an organ receive their normal, proportional blood supply, any irritation will result simply in a hyperplasia or hypertrophy. On the other hand, let one receive an undue vascular supply, an excess of one tissue—say the epithelial—will be produced, and that, too, in a limited area.

Now, the pre-eminent peculiarity of the carcinomata is that they do not respect the connective-tissue limits, that we find epithelial elements where only connective tissue should be present. I shall first refer to the epitheliomata, and take as a type those of the lips. Thiersch has shown that in the old a decided atrophy of the connective tissue of the lip is found in certain cases, so that the epithelial and glandular elements receive relatively a larger supply of blood than the connective tissue. If in such a condition of the tissues any external irritation occur, such as the smoking of a short, foul pipe, or some accidental abrasion or chap, which is prevented in any way from healing rapidly, what will be the result? Clearly the tissue possessing the better blood-supply will outstrip in growth the one having the poorer supply of nutriment. But if this irritation obtained in an organ where the connective tissue was in normal amount, not an *epithelioma* but a *papilloma* would result. An irritation of the papillary portion of the skin causes these minute elevations to grow, and we have an outgrowth, a papilloma or "wart." But let this irritation go a step

further; let the warty growth be constantly stimulated, and, by the mutual pressure of the papillæ, increased by the tendency to dendritic growth often found at their apices, the epithelial elements can no longer be thrown off, and, if I may use the term, retention-cysts are formed, crowded with cells. If the cell formation still continues, the masses of cells *must* grow in the direction of least resistance. Under the normal conditions in youth the connective tissue is too strong a barrier for extension in that direction; but in advanced age this, as has been shown, is so weakened in many cases as to permit the epithelial cells to penetrate more readily into the deeper portions of the lip than into the thick, unyielding, horny epidermis. In like manner, when the morbid process starts in the sebaceous glands of the lip, the cells find so little resistance that they readily penetrate into the subcutaneous tissue.

For the other forms of carcinoma I shall take those of the breast as the type. These occur, as a rule, at and after the middle period of life, often after years of almost ceaseless functional activity of the glandular portions of the organ, or at least before it has lost its full functional power, and yet just at the time when the connective tissue is relatively atrophied compared with the glandular. The explanation of the production of carcinoma here is similar to that for epithelioma, allowing for the differing anatomical arrangements of the parts.

Again, let us examine the breast some years later than in the supposed case above, and the conditions will be found to be reversed. Owing to the complete cessation of any demand for functional activity, the glandular elements atrophy, and now the connective tissue vastly preponderates. Irritate such a gland into formative activity, and what results? As there is almost no glandular tissue present, it is manifest that the growth cannot well be glandular to any great extent. What then? Why, plainly a "connective-tissue cancer," a true scirrhus, where the glandular elements proliferate very slightly, if at all.

If these views be correct, the objector may urge, *all* are liable to cancer in some form upon arriving at a certain age. Not so; for the relative amount of the various tissues, and the time at which they commence to atrophy, vary with each individual. One has a powerful muscular development, another a tendency to accumulate fat; one is old at forty-five years, another is young at seventy. We see this difference best shown, perhaps, in women, among whom the age at the time of the menopause has varied from thirty-five years to fifty-five, a difference of twenty years.

I believe that the so-called inheritance of cancer is this relatively earlier

atrophy of the connective tissue, and a peculiar readiness to respond to irritants of the glandular elements transmitted from father to son.

If one hundred patients suffer from wounds of a precisely similar nature, extent, situation, etc., and are treated in the same manner, do we find the healing process alike in all? On the contrary, each differs in some points from the others. In one it heals by the first intention; in another by granulations; in a third it may slough; in a fourth a spreading ulcer may form; while in some others no reparative action may occur for a lengthened period; yet we explain these differing results, and properly, by no specific action in the wound, but by a difference of constitution and readiness to respond to an irritant. Now, what is understood by this differing of constitutions and irritabilities? Do we mean some unknown, unknowable specific something which produces these results, and these only, being capable only and always of doing this same thing? Certainly not, but some anatomical peculiarity whereby the blood- or nerve-supply is either normal, in excess, or deficient; that the cells of the part are produced with the exact rapidity requisite for organization, or too quickly or too slowly for it, and that all these aberrations are within our control, because by treatment we can alter the anatomical relations of the blood- and nerve-supplies to the tissues.

Now, the sarcomatous growths occur, as a rule, at an earlier period, when the system is in its prime, viz., when the intermediary nutritive apparatus is most active and the glandular is relatively less so. An apparent proof of this protective power exerted by the connective tissue at its prime is the fact that an adeno-sarcoma of the breast will remain for years in its original condition until the time of life arrives when the connective tissue commences to atrophy, when, the growth taking on cancerous action, the glandular elements invade this tissue. Another fact in support of these tumors being due to the anatomical arrangement of the tissue is their frequent occurrence after injury, which acts, of course, in a purely mechanical manner. They also occur in cicatrices, where, equally of course, irritation has been present and is still lingering.

Sir Astley Cooper has pointed out an interesting fact with regard to the breast,—that in the virgin, and in the intervals between lactation, the cellules of the gland are in an undeveloped condition, rendering it impossible to demonstrate them, even by injecting the ducts. Thus, at these periods the connective-tissue system of the gland preponderates over the glandular.

Let me suggest that the normal vascular supply of the various organs subject to primary malignant growths should be examined by careful in-

jections in youth, maturity, at the climacteric, and in old age. If this be properly done, I hope that our labor will be rewarded by an anatomical explanation of many of the so-called specific irritants.

I am not prepared to say what is the exact nature of the irritation which sets up this abnormal action; but from the frequent coincidence of mechanical irritations in the case of epitheliomata, I am inclined to believe that there is in all cases some slight mechanical or chemical irritant acting upon the "locus minoris resistentiæ," anatomically prepared for the morbid growth. Now, by a mechanical or chemical irritant I do not mean a violent blow or a cauterizing agent, but anything that increases the amount of blood in the part, however unnoticed or unnoticeable it may be. To repeat, it is only when the blood-supplies of the glandular and connective tissues are not normally balanced that we have a morbid growth; when they are, merely a hyperplasia or hypertrophy can result. The irritant from its very nature must at the outset at least be very difficult, if not impossible, to detect, for, were it otherwise, instead of a morbid growth inflammation in some form would result. The irritant must be slight and constant, and consequently most difficult of detection.

If this be the true explanation, why then are these growths so malignant, when they are mere hyperplasiæ of elements in themselves normal? For the following reasons. If in an organ with an already insufficient vascular supply to its connective tissue we have a rapid proliferation of epithelial elements, the blood-supply will be rendered relatively still more insufficient, notwithstanding the new vascular formation in the morbid growth itself. Then sooner or later the mutual pressure of the rapidly-perforating cells will obliterate the smaller vessels, and necrobiosis will inevitably follow. The secondary so-called metastatic growths have their origin, I believe, in cells of primary growth conveyed by the lymph- or blood-currents into the various organs. These cells, endued with their exuberant pseudo-vitality, either by their own multiplication or by epithelial infection in the case of cancer, give birth to secondary growths. Also, both the primary and secondary growths frequently prove fatal by preventing organs essential to life from performing their functions properly, since these growths infiltrate until they are actually the malignant one.

I trust some one having more experience and greater opportunities will test the truth of my suggestions, by actual micro-histological examination, and I hope myself at some future day to be able to present to you the results of my own further labors. So much has been explained of late years anatomically about which we formerly were compelled to theorize, that it surely is not expecting too much to look for an anatomical reason

for morbid growths. If such be found, many causes may excite the formation of these tumors, instead of a special one for each variety.

Let me here quote from a most prominent upholder of the hereditary and constitutional origin of cancer, Sir James Paget. He says, "But now let it be observed, this tendency to cancerous disease is most commonly derived from a parent who is not yet manifestly cancerous, for, most commonly, the children are born, and sometimes even become cancerous and die, before cancer is evident in the parent; so that, as we may say, that which is still future to the parent is transmitted potentially to the offspring. Nay, more; the tendency which exists in the parent may never become in him or her effective, although it may become effective in the offspring; for there are cases in which a grandparent has been cancerous, and, although his or her children have not been so, the grandchildren have been."* . . .

With the greatest respect for Sir James Paget's opinions, I do not see why or how it is transmitted "potentially to the offspring." I would rather interpret after this fashion: the father possessing this peculiar tendency to the excessive atrophy of one tissue over the other transmits it to the children, as he does his features, etc., very possibly reinforced by a like evil tendency on the maternal side. In the case where he escapes totally there has been no local irritant, but with children there has. Again, when it leaps a generation, I would prefer to say, it leaps any exciting cause. The fact of its earlier appearance in the offspring than in the parent† would seem to confirm this, since at the time of the conception of the child the tissues of the parent would be in their retrograde condition, and consequently most likely to produce a more intense predisposition to atrophy, or an actual earlier atrophy, in so far as the child starts with a lower grade of tissues at birth than the father did at his.

Paget likewise admits the fact that cancer is unquestionably a disease of degeneracy, as shown by the age at which it occurs.‡ This is precisely what I have tried to show, only that it is a relative degeneracy of certain tissues. Dr. Walshe has collected evidence that "the maximum amount of cancerous disease occurs in Europe, and that it is very rare among the patients of the hospitals at Hobart Town and Calcutta, and among the natives of Egypt, Algiers, Senegal, Arabia, and the tropical parts of America."

Mr. C. H. Moore also says, . . . "The vigor of its growth, as measured

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* Page 792, Paget's Surg. Pathology, 3d London edition.

† Page 793, op. cit. ‡ Page 798, op. cit.

by the number and size of the deposits, generally increases instead of diminishing with the exhaustion of the patient. Improvement of the health does not feed, but starves, the disease, the reverse of what would happen if cancer were directly dependent upon that of the system."* Very possibly this improved nutrition is directed mainly to the connective-tissue system.

Dr. Walshe suggests that it may be due to "the wasting influence of the higher civilization,"† and I think it most likely, since civilization is certainly not calculated to promote the due nutrition of each and every tissue,—indeed, quite the reverse. The fact that deep mental distress has influence in favoring cancer would seem rational, since it seriously interferes with nutrition. So high an authority as Sir James Paget says on this point "that we can hardly doubt that mental depression is a weighty addition to the other influences that favor the development of the cancerous constitution. Nor is it strange that it should be so: it is consistent with the many other facts showing the affinity between cancer and depressed nutrition."‡ Even he, who has no belief whatever in the local origin of cancer, is compelled to admit that some parts are specially fitted for it, and that age increases this fitness, but he cannot say how, as in the following quotation: "We are of course disposed to look for explanation to peculiarities of tissue, and to their changes with age, and we can hardly doubt that these are chiefly influential."§ Again, Paget gives us an important argument, as it seems to me, against the constitutional "specific" cause of cancer, in that he says, in a foot-note to page 829, 3d edition, of his Pathology, "The induction of this secondary cancerous cachexia by the presence of a cancerous tumor is well illustrated by such cases as sometimes occur, in which, after the removal of the tumor, the general health remarkably improves, to fail again when recurrence ensues, and again mend after the second removal."

Secondary cancerous cachexia here means what is generally understood by the ordinary cancerous cachexia.

The lungs, liver, and bones are the most usual sites for the secondary growths, which is easily explainable by examining the anatomical arrangement of the blood-vessels in these organs, and their relative position in the route of the circulation. Carcinomata are undoubtedly propagated along the lymphatic system. All the lymph is emptied into the veins, and must

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* Holme's Syst. Surg., vol. i. page 590, 2d ed.

† Pages 799, 800, Paget's Surg. Pathology, 3d London edition.

‡ Page 800, op. cit.

§ Page 804, op. cit.

go through the lungs first. Here the fragments, if of too large size, will be arrested; if not, they will pass on to other organs possessing either capillaries of smaller diameter or mechanically favorable for entangling small particles. Just this latter condition obtains in the liver and bones, the former having a double capillary network varying in diameter, and the latter having vessels coming off at acute angles in a perfectly rigid surrounding tissue. There is also reason for believing the blood-current is slower in the bones than in some other organs. In the cases apparently not thus explainable I would call attention to the fact that small secondary tumors may have been overlooked which have really been the primary sources of the truly tertiary growths, which we wrongly consider secondary, or, as some would have, primary, because not in the proper anatomical line for emboli.

To save space, I have not alluded to the more common arguments for or against the constitutional origin of cancer, since most are probably familiar with them. *March 22d*, 1877.

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